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Evaluation of Workplace Quality

A Method for Improvement and Further Development of Workplace Design for the Future

Trondheim, May 15th 2012

Master's Thesis

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Ekstrakt:

This master's thesis highlights the importance of workplace evaluation in further development and improvement of workplaces for the future.

The goal of this thesis was to decide on a method within building evaluation that is suitable for workplaces and can be used for improvement and further development of workplace design for the future.

With Telenor as a pilot study in this thesis, the purpose was to adapt and adjust a workplace evaluation method to fit the purpose of evaluation of the Telenor Workplace Model in order to make it standardized for future use.

The aim of this master's thesis was therefore to ratify to what degree building evaluation can contribute in further development and improvement of open plan workplace design in an organization.

The thesis concludes that, in order to further develop and improve the workplaces of Telenor, the method developed in this thesis can be used to evaluate the usability of the workplace by collecting both qualitative and quantitative data. The result of such an evaluation would provide Telenor with the information they need in order improve and further develop their workplaces for the future.

It is suggested that The Survey of Workplace Quality can be used as a supplement to applications of USE-Tool in order to collect the quantitative data needed for benchmarks and presentation purposes.

Stikkord:

1. WORKPLACE EVALUATION
2. WORKPLACES FOR THE FUTURE
3. USER'S PERSPECTIVE
4. TELENOR

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Preface

This report serves as the Master's Thesis for the author's completion of the master program Real Estate and Facilities Management at the Norwegian University of Science and Technology (NTNU).

The research performed in this thesis was carried out in the period from November 2011 to May 2012 and the final thesis represent 30 credits of the total 120 credits of this master's degree program. The program is offered in cooperation between the Faculty of Architecture and Fine Art, and the Faculty of Engineering Science and Technology because the subjects covered in the program covers several disciplines.

This master's thesis highlights the importance of workplace evaluation in further development and improvement of workplaces for the future.

The research provided in this thesis was initiated with an existing survey developed to evaluate offices in a post occupancy phase on a detailed and analytical level. An early edition of this survey had already been used by Telenor Real Estate in their projects to evaluate the usability of their workplace model.

The developed method was applied to a pilot study at Telenor Budapest where the method and its tools were tested and evaluated.

I hereby declare that this thesis is an independent work performed, in cooperation with Telenor Real Estate, according to the examination regulations at the Norwegian University of Science and Technology. However, this does not imply that the methods which have been used, the generated results, or the conclusion drawn, have been verified by any of these institutions.

Trondheim, May 15th 2012

Trine Eide Schjølberg

Acknowledgements

The research process of my master's thesis has been educational, exciting and extensive, and with the product now ready for print I would like to acknowledge all the people whose contributions has been inevitable to this research.

Although most of the research and preparation of this thesis was performed in my own city Trondheim, almost all the qualitative and quantitative data was retrieved during a research trip to Zurich University of Applied Sciences and a pilot study trip to Telenor's location Budapest, in which several people contributed with their knowledge, opinions and experiences in order to make the argument in this thesis solid.

First and foremost I would like to express my thanks my thesis advisor, Siri Hunnes Blakstad, for her guidance, support, and engagement in my research throughout its duration. As she is the Head of Workplace Management at Telenor Real Estate and a professor at the Department of Architecture and Management at NTNU, she was an obvious contributor of knowledge on both the academically and organizational level of this thesis.

Next I would like to express my gratitude to Lukas Windlinger Inversini from Zurich University of Applied Sciences for giving me access and insight into his not yet released research and for guidance and numerous discussions on the topics of his and my research, and last but not least, participating in an expert interview during my stay in Zurich in December 2011. I would also like to thank Nils Gersberg from Zurich University of applied sciences for sharing his experience and knowledge about office evaluation in an expert interview performed in Zurich.

Further I want to express my thanks to everyone involved in the pilot study performed in during my stay in Budapest in April. Especially to Siri Hunnes Blakstad and Dragana Jaukovic who let me be a part of their visit to Telenor Budapest and for letting me test my methods at the premises. Also, I would like to express my gratitude to the 44 respondents to my survey on workplace quality, the 9 participants in the usability walkthrough and the 6 participants that helped assess the usability of the survey in my focus group.

Last, but not least I would like to thank my family for all the support and encouragement during my time as a student, it has been a long and adventures journey.

Summary and Conclusions

Background for Master's Thesis Research

Most of the workspace inhabited by people today were developed in and according to work needs in a time when the pace and character of changes in work were much less pronounced than they are today (McGregor & Then, 1991). Innovative thinking in office design is once again changing the way we think about our workspace, on a level not experienced since the end of the nineteenth century. Duffy (1997) states that the way people work in their offices are changing rapidly and that these changes will affect the conventions upon which office design and real estate practice have been based for decades.

New technology enables people to work from almost anywhere at any time. Office design therefore plays an important role and should encourage and support the new ways of working Tanis and Duffy (2008, cited in Grech & Walter, 2008) asserted that the benefits of office design were measurable, by putting office design into the general context of business. They made the distinction between efficiency and effectiveness to office design, making it possible to measure the business benefits of design features that save money and add value.

In order to create functional workplaces for the future, which not only anticipates, but take full advantage of all the changes that are taking place, it is important to have the right methods and tools for evaluation of workplaces. With such an evaluation it is possible to identify challenges in the workplace design that can be improved in order to develop workplaces that better supports the users in their daily work task (Duffy, 1997).

The goal of this thesis was to decide on a method within building evaluation that is suitable for workplaces and can be used for improvement and further development of workplace design for the future. With Telenor as a pilot study in this thesis, the purpose was to adapt and adjust a workplace evaluation method to fit the purpose of evaluation of the Telenor Workplace Model in order to make it standardized for future use. The aim of this master's thesis was therefore to ratify to what degree building evaluation can contribute in further development and improvement of open plan workplace design in an organization.

Research and Development Process

The research initiated with an existing survey developed to evaluate offices in a post occupancy phase on a detailed and analytical level. An early edition of this survey has already been used by Telenor Real Estate in their projects to evaluate the usability of their workplace model.

Telenor serves the pilot study in this thesis and the purpose of this thesis was to adapt the previous mentioned survey to fit the purpose of projects in Telenor Real Estate. Telenor Real Estate has developed a Telenor Workplace Model, and wants this to be applied to every Telenor Building on a long term basis. In order to do so it is important for Telenor Real Estate to collect data that can be used to visualize the effects of such an application to the decision makers for every building. To collect this data they need a standardized method with tools easily operated and analyzed. As the Head of Workplace Management mentioned in the interview, it is important that everything is automated so that it is simple to send out, collect and analyze the evaluation results.

In order to get a deep understanding of the different aspects of background and purpose for workplace evaluation, it was considered necessary to collect information and opinions from different people involved in an evaluation. This researcher has identified three perspectives in development of an evaluation method that needs to be considered; the developer, the user and the participants. Telenor wanted a shorter survey focusing more on functional space and quality in order to quickly analyze the workplace quality for use in benchmarks or pre-, and post reconstruction comparisons, it was crucial to eliminate all questions considered sensitive and less important for the workplace function purpose

The method developed in this thesis was tested in a pilot study at Telenor's premises in Budapest in form of a newly developed Survey on Workplace Quality and the Usability Walkthrough found in USE-Tool. The usability of the survey was evaluated through a focus group at Telenor Budapest in order to assess if the method achieved the objectives stated in the research question of this thesis.

Thesis Conclusion

The method developed in this research is best suited to be used as an evaluation tool for open plan offices, but can also be used in other types of workplaces for the same purpose. The pilot study in this research is performed in a flexible, non-territorial workplace, but most of the questions in the survey tool can also be used for a workplace with cell office structure.

USE-Tool, which was evaluated to be a well suited method to serve the purpose of this thesis, is a thorough evaluation method for usability containing several steps with tools to make qualitative assessments of a building. However, it does not provide a tool to collect quantitative data. As mentioned by the Head of Workplace Management at Telenor Real Estate, it was important for an evaluation method to provide statistical results that could be presented to the decision makers in a reconstruction or development project. Another impotent goal of the evaluation was to retrieve data for benchmark. Statistical data is often preferred by people in business as it is a good and easy way to visualize results and to benchmark.

The researcher will therefore suggest that The Survey of Workplace Quality can be used as a supplement to applications of USE-Tool in order to collect the quantitative data need for benchmarks and presentation purposes.

A post occupancy evaluation involves a systematic evaluation of opinions, from the perspective of the users of a building, and assesses how well a building matches the users' needs (Preiser et al, 1988). As several of the presented evaluation methods state the importance of the user's assessments of their workplace when evaluating the improvements of its design, one can conclude that a workplace evaluation achieves its purpose.

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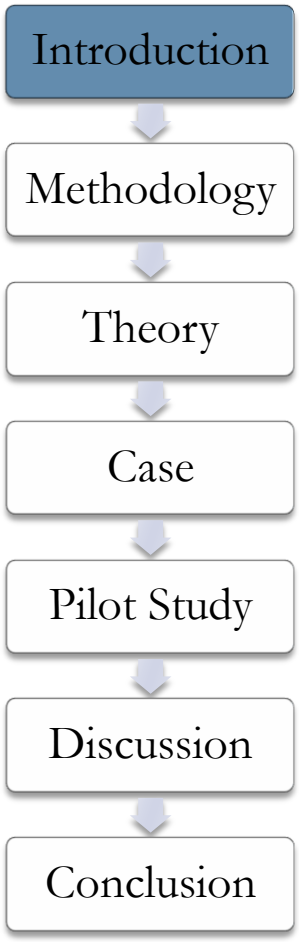
Introduction

Workplaces for the Future



1.1 Background for Master's Thesis Research

Most of the workspace inhabited by people today were developed in and according to work needs in a time when the pace and character of changes in work were much less pronounced than they are today (McGregor & Then, 1991). Innovative thinking in office design is once again changing the way we think about our workspace, on a level not experienced since the end of the nineteenth century. Duffy (1997) states that the way people work in their offices are changing rapidly and that these changes will affect the conventions upon which office design and real estate practice have been based for decades.

New technology enables people to work from almost anywhere at any time. Office design therefore plays an important role and should encourage and support the new ways of working. The mix between virtual and real workspaces will be one of the defining trends over the next decades as companies explore the future of work. Getting people to work effectively together will be the key critical success factor. Productivity of people will drive change" (Dixon & Ross, 2011).

Due to these extraordinary advances in information technology, a major change is taking place in the way we think about the buildings in which people work. Offices are not what they used to be and time and space are being used in new and creative ways (Vischer, 2005, Duffy, 1997). A consultant, Davidson (2012), from Collier International states that the modern approach for a more open plan based office solution with flexible and collaborative space is driven by the demand and need for social interaction and facilitation for groupwork within an office. He argues that office design and space planning has changed as a result of the new ways in which people work.

Tanis and Duffy (2008, cited in Grech & Walter, 2008) asserted that the benefits of office design were measurable, by putting office design into the general context of business. They made the distinction between efficiency and effectiveness to office design, making it possible to measure the business benefits of design features that save money and add value.

In order to create functional workplaces for the future, which not only anticipates, but take full advantage of all the changes that are taking place, it is important to have the right methods and tools for evaluation of workplaces. With such an evaluation it is possible to identify challenges in the workplace design that can be improved in order to develop workplaces which better supports the users in their daily work task (Duffy, 1997).

The Telenor Group will serve as a pilot study in this research. Telenor Real Estate is in need of an "easy to use", efficient, and standardized tool that can produce good empirical data when evaluating the nuances of their Telenor Workplace Model. The model and the organization will be explained further in chapter 6.

1.2 Aim and purpose

The aim of this master's thesis is to ratify to what degree building evaluation can contribute in further development and improvement of open plan workplace design in an organization.

The goal of this thesis is therefore to decide on a method within building evaluation that is suitable for workplaces and can be used for improvement and further development of workplace

design for the future. The chosen or developed method will be tested in a pilot study to evaluate the usability of its tools.

The purpose of this thesis is to adapt and adjust this method to fit the purpose of evaluation of the Telenor Workplace Model in order to make it standardized for future use.

1.3 Research Questions and Research Objectives

In order to better understand the scope and limitations of the research questions presented in this thesis, the researcher has identified several research objects that needs to be considered.

1.3.1 Research Question 1

As mentioned, companies in the 21st century is constantly working on improvement and further development of workplaces with the goal of being innovative and creative in the ways a office building can support the organization's core business and the work related activities of the people who work there. In order to determine if a newly developed workplace design is achieving the desired effect it is important to evaluate the effects it provides, before and after a reconstruction. This forms the basis for this master's thesis first research problem:

RQ1 : Can workplace evaluation contribute to improvement and further development of workplace design for the future?

Research Objectives

Workplace evaluation to contribute in improvements and further development of workplace design:

O1 Why is workplace evaluation important for future improvements on design?

O2 How can the information collected through the evaluation method be used in further development and improvement of workplace design?

1.3.2 Research Question 2

Telenor Real Estate has developed a Workplace Model which they have fully or partially implemented in Telenor's flagship buildings and major admin buildings in Norway, and most of Telenor's Business Units internationally (Blakstad et al, 2011). They wish to perform pre- and post reconstruction evaluations of the premises, units and/or work zones in order to measure effects and identify challenges where there is room for improvement. Another reason for collecting empirical data on the matter is to gather a database which can be used for future benchmarks. The organization has performed several pilot studies where they have tested a number of methods. Feedback from respondents has made the organization aware that the methods are often considered comprehensive and too time-consuming for employees to

participate in. The result was a low response rate. The Head of Workplace Management at Telenor Fornebu has therefore expressed that she believes that a survey focusing more specifically on the assessment of functions and use of space on the premises, might be a more effective way to evaluate workplaces and to get the employees more motivated to respond.

With this in mind, in order to improve and further develop workplace design in a specific organization, the second research problem was defined as:

> Is it possible to perform a more personal/individual assessment of the premises to a specific organization by adjusting and standardizing a workplace evaluation method or tool to fit the purpose of that specific company?

Research Objectives

To choose a method of Building evaluation that can be used in order to retrieve the information needed to make a conclusion:

O3 What is the purpose of workplace evaluation?
O4 Which methods exist within building evaluation?
O5 Which of these, if any, methods collect data specifically on function and use of space?
O6 Which tools are the most efficient and informative when evaluating based on the above mentioned criteria?

To Adjust and Adapt the Method to fit the Purpose of Telenor's Projects:

O 8 To develop a user friendly questionnaire which achieves a higher response rate and provides the required data to make statistical statements.
O 9 The data collected by this questionnaire should provide data which can be used to analyze the current work situation in an organization and contribute to further development and improvement of workplace design.

1.4 Research Limitations for the Thesis

This research is limited to workplace quality in the functional and usability sense, and does not include, and has not collected data on, factors like indoor climate, workplace structure, work environment in the socio-cultured sense, and technical and physical conditions in the building.

Further the research is based on the needs of Telenor Real Estate in their search for a standardized evaluation tool for their workplace model. The process and results in this master's thesis are adapted to a large company, but can also be used or adapted for research in other organizations.

1.5 Structure of the Report

This report is divided into 7 main chapters; Introduction, Methodology, Theory & Research Materials, Case Description, Pilot Study at Telenor Budapest, Discussion and Conclusion. Figure 1-1 displays a relatively detailed description of what each of the chapters includes.

Chapter 2 on methodology includes a description of the research approaches and the research process used in this thesis, from the collection of empirical data, to development of a method, testing the method in a pilot study and finally discussing the value of the achieved results. The next chapter includes all the research material collected through the literature search. Further, in chapter 4 the Survey on Office Environment Quality is presented as the baseline for the case in this research. It includes presentation of the expert interviews to further explain the background and intent of the survey. As a conclusion to the chapter, the developed Survey on Workplace Quality is presented as a product of this thesis, ready to be tested in a pilot study. Chapter 5 is a presentation of the pilot study performed in this thesis. The Telenor Group and their workplace model is explained and the pilot study at Telenor Budapest, where the methods were tested and evaluated, is presented. The last two chapters in this thesis provide a discussion of the achieved results and a conclusion to this thesis.

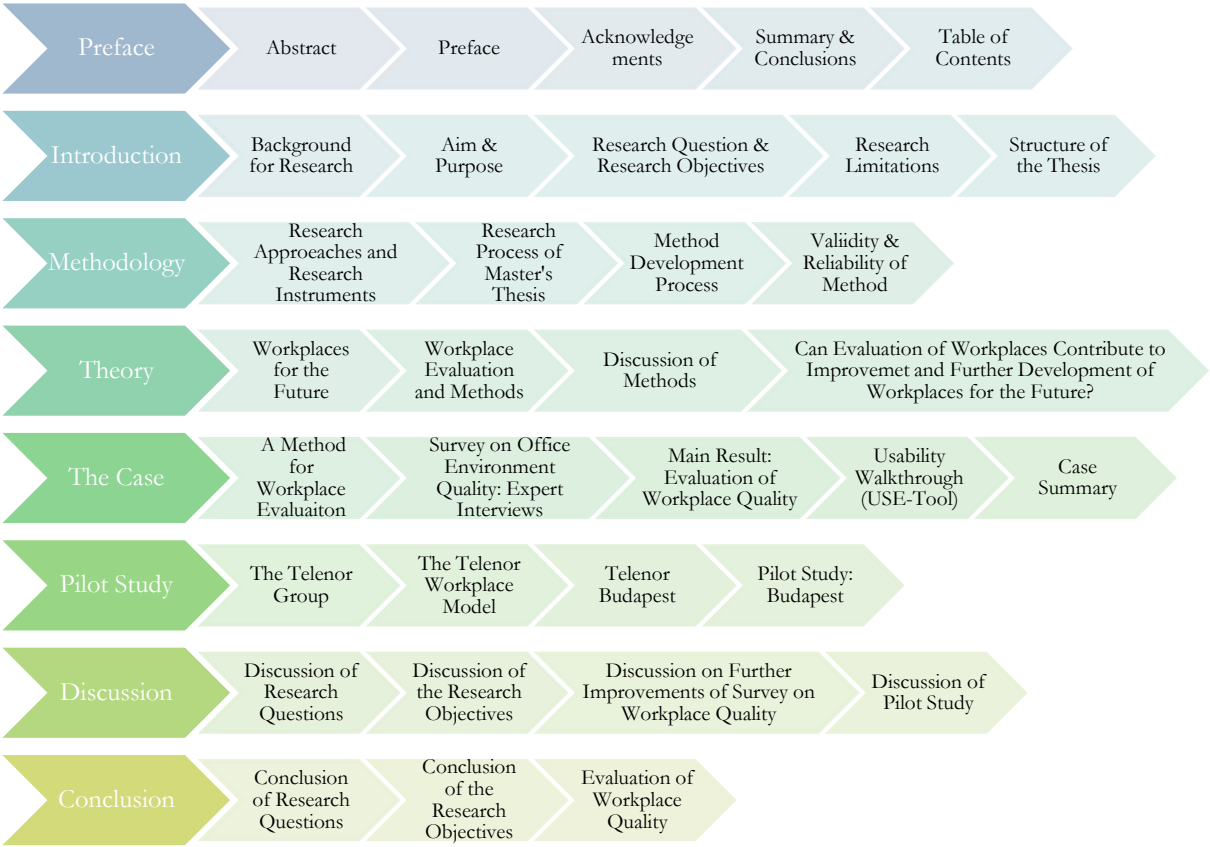
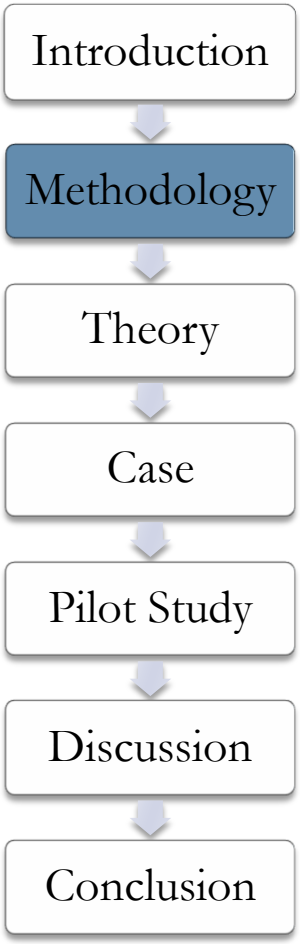


Figure 1-1: Structure of the thesis

2

Methodology

Research Approaches and Methodology



Chapter 2 includes the methodology performed in this master's thesis. The initial phase is a presentation of research approaches and research instruments that are available to a researcher. The last section contains the research process performed in this thesis based on the research approaches presented in this chapter.

2.1 Research Approaches and Research Instruments

This section will explain different types of research design with emphasis on the methods chosen in this research. Types of research which are not used in this thesis will be explained in short to give a full picture of the available research approaches.

2.1.1 Qualitative and Quantitative Research

Denzin & Lincoln (2005) defines qualitative research as a process that aims to gather an in-depth understanding of human behavior and the reasons which govern such behavior. Kotler & Keller (2006) states that qualitative research techniques permit a range of possible responses through relatively unstructured measurement approaches. Qualitative data is usually presented in forms of words or illustrations and there is a wide range of possible research techniques which can be used to collect them.

Given (2008) defines quantitative research, used in the social science, as systematic empirical investigations of social phenomenon via statistical, mathematical or computational techniques. Quantitative data are presented in numerical form through statistics, percentage, etc.

2.1.2 Primary and Secondary Data

Primary data can be defined as information collected specifically for the investigation at hand, and secondary data as information not gathered for the immediate study at hand, but for some other purpose (Churchill et al, 2010). Primary data can be collected in five main ways: through observation, focus groups surveys, behavioral data, and experiments (Kotler & Keller, 2006). Secondary data can be divided into internal and external data. Data which originate from the organization for which the research is being done are internal data, and data that originate from outside the organization for which the research is being done are external data (Churchill et al, 2010).

2.1.3 Research Design

A research design can be described as the framework or plan for a study used as a guide in collecting and analyzing data. If one does not have a detailed blueprint for the research, it is still possible to perform the research, but like a building project without a plan, the results are almost always less than desirable (Churchill et al, 2010, Gripsrud et al 2007).

Research design can be broken into three basic types: exploratory, descriptive, or casual. Although it might seem like the different types of research design must proceed in order, one might in some cases get results from descriptive or casual projects which lead to more questions and to more exploratory research. Figure 2-1 shows the relationships between exploratory, descriptive and causal research design. The smaller arrows demonstrate the different ways in which the types of research design can be interrelated.

Exploratory research is often seen as the initial step in this continuous process. It can be used to narrow and refine the problem, and descriptive and causal research should be used to find answers and to draw conclusions. When choosing the right type of design for your research it all depends on how much you know about a topic, and what ambitions we have in order to analyze and explain relations. (Churchill et al, 2010, Gripsrud et al, 2007).

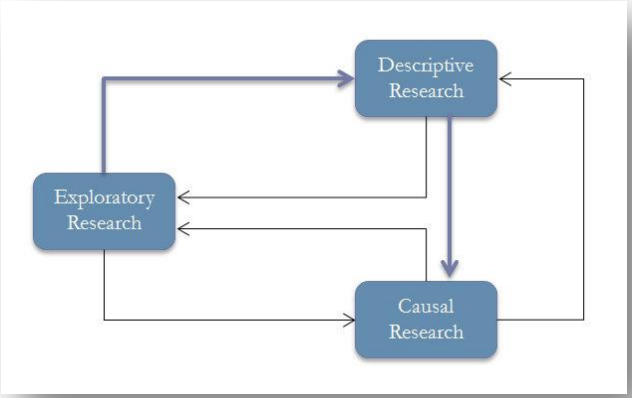


Figure 2-1 Relationships among research designs (Churchill et al, 2010. P.80)

The research designs mentioned above will be elaborated on further with emphasis on the designs and methods used in this thesis. The thesis consists of only exploratory and descriptive research designs, but causal research design will be explained in short at the end of the chapter to show all possible research designs available when starting a research project. Methods within each of these research designs used in this thesis will be elaborated on more extensively than the ones not used.

2.1.4 Exploratory Research Design

The general purpose of exploratory research is to gain insight and ideas. Broad and vague problem statements can be broken into smaller, more precise sub-problem statements. In the early stages of research one do usually not know enough about a problem or an opportunity to formulate a specific hypothesis, and exploratory research can be used to establish priorities in studying competing explanations. Exploratory research becomes the foundation for a good study, and these studies are typically small scale and quite flexible. The goal is to have generated a hypothesis about the key aspects of a situation after the exploratory phase is over. (Gripsrud et al, 2007, Churchill et al, 2010). "When conducted correctly, exploratory research should provide a better understanding of the situation; this kind of research is not designed to come up with final answers and decisions" (Churchill et al, 2010. p.81). The different types of exploratory research designs are presented in figure 2-2.

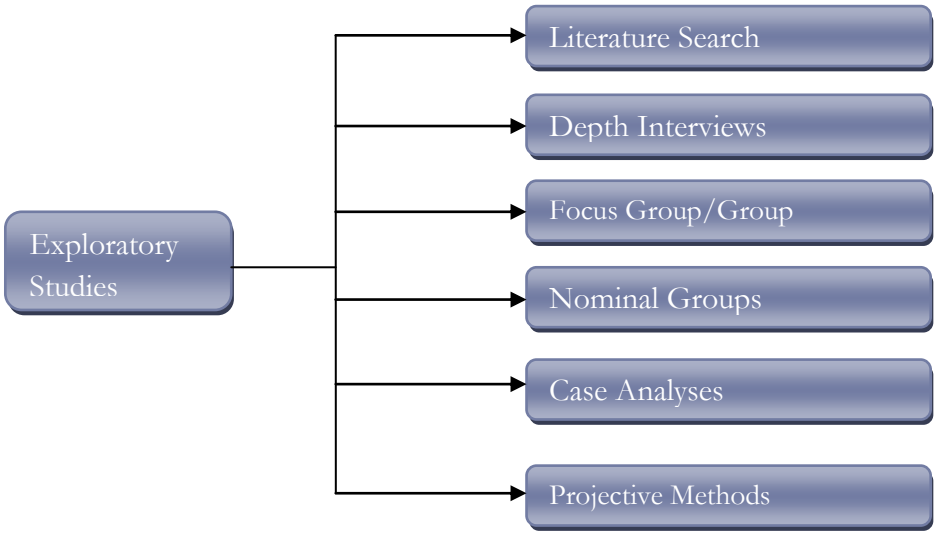


Figure 2-2 Types of Exploratory Studies (Churchill et al, 2010. P.82)

Literature Search

Literature search is a search of statistics, trade journal articles, other articles, magazines, newspapers, and books for data or insight into the problem at hand(Churchill et al, 2010). Gripsrud et al (2007) states that there are two reason why one has to perform a literature search; to increase the understanding and knowledge on the subject area of the study (explorative design), and to understand the factors that should be included in the study (descriptive and causal design). The major emphasis of a literature search is on the discovery of ideas and tentative explanations of the phenomenon and not on drawing conclusions (Churchill et al, 2010).

Depth Interviews

Depth interviews are interviews with people who obtain certain knowledge about the general subject being investigated. Individual depth interviews are performed when the individuals personal experience, opinions or similar are of interest. The interview is performed in a one-to-one situation with an interview guide as the basic tool. Usually individual interviews last for about 1-2 hours and the questions are open and leave room for the interviewee to speak freely about the subjects (Gripsrud et al, 2007, Churchill et al, 2010).

These types of interviews are usually performed when the subject in question is hard to treat in an ordinary questionnaire or a focus group, for example if the subject is of a sensitive character making it hard for respondents to comment in the presence of other respondents. In situations where it is simply the respondent's individual everyday experience that is desirable to research, an individual depth interview is also preferable (Gripsrud et al, 2007).

Focus Group

A Focus Group is an interview conducted among a small number of individuals simultaneously and relies more on a group discussion than on directed questions to generate data. The group normally consists of six to ten people, carefully selected based on certain demographics, psychographics, or other considerations. The respondents are asked to thoroughly discuss the various topics of interest provided by a professional research moderator, which main responsibilities is to ensure that the agenda is followed and that all the right material is covered during the process. The moderator will have a guidebook (or interview guide) which is an ordered list of the general (and specific) issues to be addressed during the focus group. These topics should normally move from general to specific (Kotler & Keller, 2006, Churchill et al, 2010).

Nominal Groups

Nominal groups are a type of group interviews which initially limits respondent interaction to a minimum while attempting to maximize input from individual group members. The characteristics of this technique is similar to the one used in a focus group, but the primary difference is that the nominal group require written responses by the respondents before they open up a group discussion. By asking the respondents to think and write before they discuss might eliminate issues like people dominating the group or that the respondents are affected by each other opinions. They are asked to reveal their answers one by one and after everyone has shared their opinion the subject will be open for discussion (Churchill et al, 2010).

Case Analysis

Case Analysis is an intensive study of selected examples of the phenomenon of interest. A phenomenon can be observed as it occurs by researchers in any case analysis (Churchill et al, 2010).

Projective Methods

Projective methods encourage respondents to express their personal feelings, thoughts and behaviors by shifting the focus away from the individual through the use of indirect tasks (Churchill et al, 2010).

2.1.5 Descriptive Research Design

According to Gripsrud et al (2007), the purpose of descriptive design is to describe a specific situation in a specific area. This type of research design is very common in business and other aspects of life. Descriptive research is used for the following purposes; to describe characteristics of certain groups, to determine the portion of people who behave in a certain way and to make specific prediction. There are two types of descriptive studies; cross-sectional study and longitudinal study. A wide variety of research objectives can be answered with studies of a descriptive design, but the collected descriptive data will only become useful for problem solving when the process of the research is guided by one or more specific research problems defined through much thought and effort. Descriptive studies require a clear specification of the who, what, when, where, why, and how of the research, and is considered to be rigid. Figure 2-3 shows the basic two types of descriptive designs and what they contain (Churchill et al, 2010).

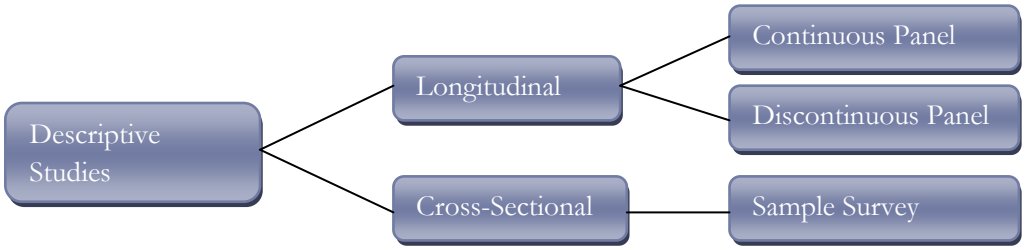


Figure 2-3 Classification of Descriptive Studies (Churchill et al, 2010. P.110)

Cross-Sectional Study

The cross-sectional study contains a sample survey where the sample is selected to be representative of the target population. The emphasis in this sample is on the generation summary statistics such as averages and percentages (Churchill et al, 2010). It is an "investigation involving a sample of elements selected from the population of interest which are measured at a single point in time" (Ibid. p.109).

A questionnaire is an instrument used to collect information in a way that the communication between the interviewer and the interviewee is standardized. All respondents are, in principle, asked the same questions in the same order, and have the same response alternatives. An

exception to this rule is when the respondent is asked to skip certain questions if the answers are not relevant (Gripsrud et al, 2007).

When using Survey Questionnaires the analysts must have made a careful selection of questions and thoughts about the formalities of the test. Normally, we distinguish between the following techniques (Gripsrud et al, 2007); postal surveys, telephone surveys, personal interview surveys and web-based surveys. According to Kotler & Keller (2006), the questionnaire is by far the most common instrument used to collect primary data, due to its flexibility.

Kotler & Keller (2006), states that a newly developed questionnaire should be tested and debugged before they are administered on a large scale. The development of the questionnaire is a well thought-out process as questions and their form, wording and sequence are carefully chosen.

According to Kotler & Keller (2006), a questionnaire may consist of both closed-ended and open-end questions. Closed-ended questions can be defined as questions that specify all the possible answers and provide answers which are easier to interpret and tabulate. Questionnaires can collect written replies through open-ended questions which allow respondents to reveal more about their personal opinions. These types of questions are especially useful in exploratory research as the researcher is looking for insights into how people think rather than measurements on how many people think a certain way (Kotler & Keller, 2006)

Longitudinal Study

A longitudinal study is an investigation involving a fixed sample of elements, and they are measured repeatedly through time. A longitudinal study involves a panel, which is a fixed sample of elements. Members may be added to replace dropouts in a panel, but the panel or sample remains relatively constant through time. A longitudinal study consists of two types of panels; continuous panels and discontinuous panels. The first is a fixed sample of respondents who are measured repeatedly over time with respect to the same variables. The second is a fixed sample of respondents who are measured repeatedly over time, but on variables that change from measurement to measurement (Churchill et al, 2010).

2.1.6 Causal Research Design

As mentioned earlier, a causal research design emphasizes on determining cause-and-effect relationships through experiments. Experiments are scientific investigations in which an investigator manipulates and controls one or more independent variables. The researcher observes the degree to which the dependent variables change (Gripsrud et al, 2007 & Churchill et al, 2010).

Kotler & Keller(2006) states that experimental research is the most scientifically valid research method. A company performing an experimental research might try different version of e.g office structure layouts, furniture or other environmental factors and observe how the responds change.

2.2 Research Process of Master's Thesis

The following chapter explains the methodology used in this research. Figure 2-4 shows the entire research process divided into three levels; Development Process, Interview

Process/Empirical Data, and Theory Process. These three levels are connected and combined as they reach the phase of results and analysis. Further the results were discussed leading up to a conclusion and in the end to further adjustments on the developed method. This chapter will explain each of the phases more detailed in a chronological order.

The development process for this thesis, as shown in figure 2-4, depicts the process from the original Survey on Office Environment Quality through the stages of analyzing, adjusting and adapting, to the finished product Survey on Workplace Quality. The later stages in the research process in the vertical line are the results and analysis, discussion of and final adjustments of the survey. The research process in this thesis started with an existing survey developed to evaluate offices in a post occupancy phase on a detailed and analytical level. Each of the phases in this process will be explained in chronological order in the sections below. The final survey is presented as a conclusion to this thesis after being adjusted according to the results found in the pilot study. The final chapters of this thesis provides a discussion and conclusion to the presented research problem and research objectives stated in chapter 1.

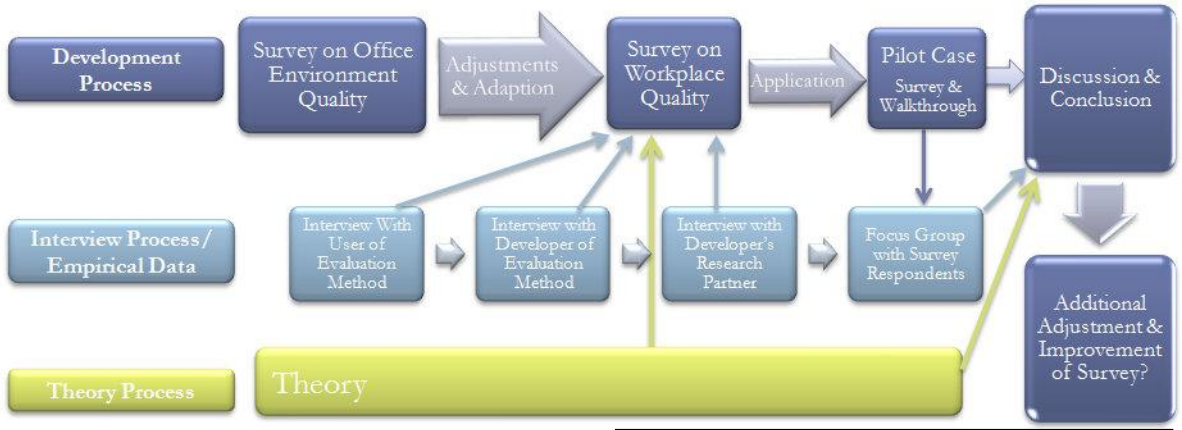


Figure 2-4 Research process of master's thesis

2.2.1 Type of Study

This empirically based research project is performed as a qualitative study with the aim to develop a qualitative and quantitative evaluation method for workplaces. In order to get a deep understanding of the different aspects of background and purpose for workplace evaluation, it was considered necessary to collect information and opinions from different people involved in an evaluation. This researcher has identified three perspectives in development of an evaluation method that needs to be considered; the developer, the user and the participants.

In the process of collecting empirical data for this thesis, qualitative research with both exploratory and descriptive design was performed in form of literature search, individual depth interviews, focus group, usability walkthrough and a survey questionnaire. Relevant literature was collected and depth interviews were performed as exploratory research. The depth interviews were conducted with the developer of the Survey on Office Environment Quality, his research associate and the Head of Workplace Management at Telenor Real Estate. They have already started to use an early edition of this survey in Telenor projects. Descriptive research was performed in shape of a focus group with the participants in the pilot study.

As a pilot study testing the usability of the method developed in this thesis, quantitative data was collected through a survey and qualitative data through a workplace walkthrough.

2.3 Method Development Process

The following is a presentation of the method development process in this thesis. It is structured according to the research process model earlier presented in this chapter (figure 2-4) starting with the process of developing the Survey on Workplace Quality based on literature and expert interviews. Further it elaborates about the application of the method in the pilot study performed in cooperation with Telenor Budapest with testing the survey and walkthrough, and evaluating the survey in a focus group with respondents.

2.3.1 Development of the Survey on Workplace Quality

The survey on Office Environment Quality, has previously been used as a tool for evaluation by Telenor Real Estate. Telenor Real Estate has produced several editions of the survey, both long and short, in order to figure out which design would serve their purpose best. This research was meant to process the survey in question to fit the purpose of an organization (Telenor). In order to achieve the results they desired, the survey had to be downsized and sensitive, and less important questions for this purpose had to be eliminated. The original survey which served as a base for this research is presented in chapter 4 of this thesis.

The survey was adjusted and adapted to fit the purpose described by the Head of Workplace Management at Telenor Real Estate. The Survey on Workplace Quality was developed to be a survey focusing more on functionality and usability of the workplace. A more detailed description of this survey is presented in chapter 4 of this thesis.

In the process of collecting empirical data for the development of the survey, both exploratory and descriptive methods were used. Exploratory research was done through depth interviews and literature research and descriptive research was performed in shape of a focus group. The focus group will be presented in chapter 2.3.2 application of method.

Literature Search - Exploratory

Relevant literature on post occupancy evaluation/workplace evaluation, different evaluation methods, new ways of working, research methods and survey design was collected throughout the research period. The collection process lasted throughout the research and data was repeatedly supplemented as contents to chapter three of this report.

Depth Interviews – Exploratory

Participants: Developer and User of the Evaluation Method

Three depth interviews were conducted early in the process of this research as they would serve as the base of development of the Survey on Workplace Quality. The first depth interview was performed at the Norwegian University of Science and Technology on Monday November 21st 2011 with Head of Workplace Management at Telenor Real Estate Fornebu. This interview was performed in Norwegian as this was the native language of both the interviewer and interviewee. The interview was later translated into English. The second and third interviews were performed at Zurich University of Applied Sciences [ZHAW] on Wednesday November 30th and Thursday

December 1st 2011, with the developer of the Survey on Office Environment Quality and his research associate at ZHAW. Both interviews were performed in English. All the interviews were recorded and later written down by the researcher. In order to assure that the written version of the interview was correctly cited and interpreted by the researcher, a copy of the written interview was sent out by email to all the interviewees to be confirmed.

The purpose of these interviews was to collect important data from a developer- and user perspective of an evaluation method in order to determine the purpose of the survey, how the survey should be administered, how it should be designed, what it should contain and experiences with previously tested surveys. Questions in these interviews are based on general survey design theory on what surveys should contain and how they should be conducted etc. (Kotler & Keller, 2006, Churchill et al.2010, Gripsrud et al., 2007). The Interview Guide used in these depth interviews can be found in appendix 6.

2.3.2 Application of Method in Pilot Study at Telenor Budapest

In order to test the developed method, Telenor Budapest was chosen to serve as a pilot study. The newly developed survey was sent out to the users of the Telenor workplace in Budapest prior to the researcher's visit to the premises in April 2012. During the visit the usability of the survey was discussed in a focus group with some of the respondents. Another tool, Usability Walkthrough, was added to the evaluation method in order to collect better and more thorough data. This tool was tested during the visit to Telenor Budapest, with two participating groups of users.

Test of Survey on Workplace Quality (Cross Sectional Sample Survey – Descriptive)

In order to test the function of the developed Survey in this research, a pilot group was selected at Telenor's location in Budapest, Hungary. The survey was sent out on Tuesday April 17th 2012 leaving the respondents one week to reply to the survey. The Survey on Workplace Quality was prepared in the online survey software Enalyzer, where the respondents can click through the survey by simply entering an Internet link provided through an email sent out to the entire test group. The pilot group consisted of 107 employees at Telenor Budapest, all from different sections and departments. The survey collected a total of 44 fully completed replies, and 12 partially completed surveys, resulting in a response rate of 41%. Only the completed surveys are included in this response rate. The data was retrieved and analyzed through Enalyzer. The data was exported to excel, edited and finally converted into a portable document format (pdf) which can be found in appendix 3. The results are also presented in chatper 5.

The purpose of performing the survey was to be able to later collect users' experiences in order to determine the usability of such an evaluation method, and if it will collect the necessary data. A print of the entire survey can be found in appendix 1.

Test of Usability Walkthrough (Nominal Group Descriptive)

Participants: Employees at Telenor Budapest

Two walkthroughs were conducted at Telenor Budapest on Thursday April 26th 2012, and consisted of groups with four and five selected employees from different departments. The walkthroughs were conducted at 1:00 and 3:00 pm, lasted from 60 – 80 minutes each and

contained six stops (points for discussion) chosen in advance according to USE tool. The stops were selected based on their assumed importance and functionality for the users, and because they were considered the most interesting locations for discussion. During the walkthrough the groups stopped at each location and the participants were first asked to spend five minutes to write down positive and negative experiences from the location, what kind of work they performed there and if they had any suggestions for improvements of the space. Next, they were asked to discuss their points with the other participants in order to get a discussion on the matter.

The walkthroughs were performed in cooperation with the Head of Workplace Management from Telenor Fornebu and the Real Estate Manager from Telenor Serbia and Montenegro, and was meant to collect data for Telenor Real Estate Group for future references. The purpose of the Walkthrough in light of this research was to determine if such a method for evaluation would be a beneficial supplement to the Survey on Workplace Quality in order to collect better supported data sets with comments from the users. The Usability Walkthrough Guide can be found in appendix 2, and the reported results can be found in appendix 4, and a short summary of the results are presented in chapter 5.

Focus Group for Evaluation of Method – Descriptive

Participants: Respondents from Survey on Workplace Quality

A focus group consisting of five selected employees was held at Telenor Budapest on Friday April 27th 2012. All the participants were part of the pilot group that received the survey, and consisted of employees who did, and did not reply to the survey. In this interview the respondents were asked about their motivations for participating in the survey, the layout, the questions, how long it took to answer and what they thought about the length of the survey.

The purpose of this focus group was to evaluate the usability of the Survey on Workplace Quality developed in this research, to understand how the survey was perceived by the respondents, and to get their comments for further improvements and adjustments. It was important to determine if the survey served the purpose it was meant to; to help further develop and improve workplaces with focus on supporting the users and the company's core business. The interview guide used in this focus group can be found in appendix 5. The results from the focus group are presented in chapter 5.

2.4 Validity and Reliability

Validity is defined as the establishment of whether the results obtained all of the requirements of the scientific research method (Gripsrud et al, 2007).

The data and material collected during the research process of this thesis have been used to define purposes of workplace evaluation in order to develop a workplace quality evaluation. The evaluation is meant to collect information on how the workplaces can be improved and developed further in order to meet the requirements of a workplace for the future. With the research questions as a base for the research, necessary information has been collected from developers, users and respondents. However, the analyses and conclusion of this thesis are based, focused and restricted to a specific company, The Telenor Group. Although the methods

developed in this thesis might be adaptable for use in other organizations, the pilot case in this research was performed in cooperation with Telenor. This research is therefore only valid for this specific company for improvement and further development of their workplace model.

The ambition level of this master's thesis is restricted to a concrete research question and the organization utilized in the case study. Analyses and its understanding are valid for this concrete organization. The developed method in this thesis is part of a structured research process, which might make it possible to apply this workplace evaluation method to other organization with similar desires to improve and further develop their workplace design. The thesis utilizes both qualitative and quantitative methods in its research process, resulting in a better supported set of data and a larger base of knowledge to reflect on.

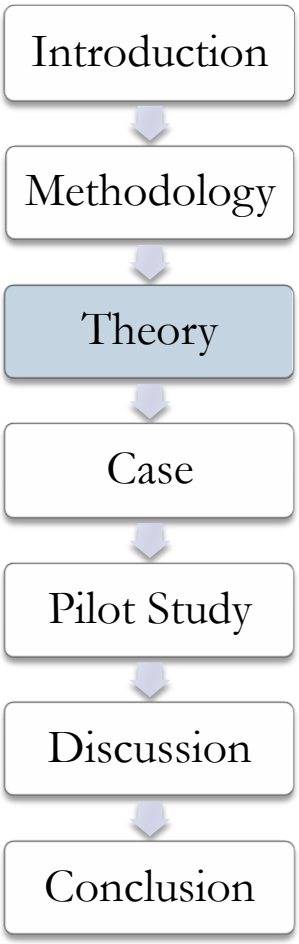
Reliability can be defined as the extent to which one can be certain that the results are reliable. In other words, if other researchers were to repeat the study using the same or other methods, would they retrieve the same result?(Gripsrud et al, 2007).

With this master's thesis in mind it is difficult to assess the level of reliability achieved in this research. The main product from the results of this thesis is the developed survey on workplace quality, which is a product of a questions selection process made by the researcher and the Head of Workplace Management at Telenor based on a previously defined purposes of the survey. If the same research is done by others by following the same method of information search through interviews and focus group, one might not retrieve the same results. The focus group assessing the usability of the survey would consist of different people with other opinions on the matter. This might result in a slightly different survey with other variables in the end.

3

Theory

Workplaces for the Future & Post Occupancy Evaluation Methods



This part of the project will present the theory retrieved in the literature search of this research project. It will explain different methods of workplace evaluation and survey development. Each of these methods will be described and finally discussed based on comparison. The chapter is divided into four major parts including; Workplaces for the Future, Workplace Evaluation, Different Evaluation Methods and Research Approaches and Research Instruments.

WORKPLACES FOR THE FUTURE

This section of chapter 3 will introduce the theory around workplaces for the future which will serve as a base for this research. It will explain the concepts of the Knowledge Workplace, Facilities Management, Workplace Management, Space Planning and Usability in Workplaces. These concepts are a necessity in understanding why workplace evaluation is so important in the development and improvement of workplaces for the future.

3.1 The Knowledge Workplace

Drucker (2000) defines the knowledge worker as "someone who knows more about his or her job than anyone else in the organization". Nenonen et al. (2009), states that the product of a knowledge worker is typically intangible, and that knowledge is the addition of meaning, context and relationships to data or information.

Peter Drucker coined the term 'knowledge work' in Landmarks of Tomorrow (1959) to describe work that occurs primarily because of mental processes rather than physical labor. Further he states that the tasks included in knowledge work is planning, analysing, interpreting, developing, and creating products and services using information, data or ideas as the raw materials. Nenonen et al (2009) define knowledge work as "the creation, distribution or application of knowledge by highly skilled, autonomous workers using tools and theoretical concepts to produce complex, intangible and tangible results" (p.12) She lists several work settings in which knowledge work takes place: in Collaborative Working Environments (CWE) that are combinations of physical, IT-based and social or organizational infrastructures supporting people in their individual and collaborative work.
A workplace designed for the future must be prepared to accommodate rapid changes of economic, technological and social character. In addition it must also strive to reflect and promote new ways of working. It is important that the considered needs of people and their current or future work processes are reflected in how the work environments in terms of their location, size and configuration are developed (McGregor, 1991).

Consultants from Smith Group JJR explain how technology now is the backbone of all organizations and that we have to prepare for workplaces of the future. The nature of work is changing and this results in new ways of designing offices to support a more team based way of working. SmithGroupJJR's designs offices with the profile "Workplace of the Future" with open and team-based workplaces, giving a new balance between individual- and group based work. The idea is basically that every worker can work productively, from anywhere, any time without actually being in the office building itself. This way, employees do not have an assigned

workstation, but can each day find a new space to work in which is appropriate for their tasks that specific day.

Another consultant, Davidson (2012) argues that employees want to be able to have a flexible workplace where work can be taken wherever employees might go. When the ways in which people work changes, the office design and space planning also needs to change. Further he argues that it is important in the modern approach to workplaces, to provide more collaborative working areas where staff can meet informally to discuss business without having to move too far from their workplace. He sees an increasing demand for social interaction between employees and believes that this is the reason for the move toward more open plan based office solutions with flexible and collaborative space.

It was often assumed that the size of one's office, the location of it, and the style of its furnishings and desk accessories, reflected the status of one's employment in the company. Now, this is often not the case as we move in to more modern based offices of the twenty-first century. The typical workspace has changed from an enclosed room, often called a cell office, to a more open spaced workspace design called an "open plan" work zone. In this type of office design, senior executives find themselves moved into an "open office concept" away from their large corner offices and Managers, if lucky enough to get a private office, will be placed in a room with glass walls in the center of the workspace which does not provide visual privacy (Vischer, 2005).

Findings done in a research project on knowledge workplace states that openness in the workplace design enhances collectiveness, transfer of information and interaction. Siri Hunnes Blakstad, Morten Hatling and Arne Lindseth Bygdås performed this research project and they found that open plan offices indeed do enhance collaboration and knowledge sharing within the department/work unit, while they may create less cooperation between the different units and departments. The same research shows that respondents have more difficulties performing work that requires focus and concentration, and there are also more reports and complaints about noise than before. In the collected empirical material the researchers could see large differences between departments and units within the same organization, making it hard to generalize the needs and design solutions for all offices. Differences in work processes, as well as different cultures, management, and implication processes will therefore create varying user satisfaction even within the same organization, and in similar office space (Blakstad et al. 2009).

3.2 Facilities Management & Workplace Management

3.2.1 Facilities Management

McGregor & Then (1991) define facilities as "the infrastructure that supports the people in the organization in their endeavors to achieve business goals". Facilities are, in other words, the tools needed by the people in an organization to carry out their tasks.

Facilities Management (FM) can be defined as "integration of processes within an organization to maintain and develop the agreed services which support and improve effectiveness of its primary activities" (NS-EN 15221-1). Facilities Management is a broad field and the The United States of America Library of Congress provides an initial definition of FM: "The practice of coordinating

the physical workplace with the people and work of the organization; integrates the principles of business administration, architecture and the behavioral and engineering sciences" (McGregor & Then, 1991).

FM put the users of the building in focus and helps ensure that the framework of production or what is defined as the core business is optimal at all times. This includes factors such as environment, health and safety, employee's well-being, indoor climate, lighting, sound, service, canteen etc. (Haugen, 2008)

Factors like information technology, expectations of employees, the cost of mistakes in building, the cost of building space and global competition are the reason behind Facilities Management becoming one of the fastest growing disciplines in the built environment."These factors have forced facilities management to move from the basement to the boardroom; from a hidden function entrusted to the sleepy, slow and steady to one performed by increasingly bright-eyed and dynamic facilities managers" (Tonono, 2008. p. ii). The models used in the wide field of FM have to respond to the particular needs of each organization, and does accordingly differ considerably from one organization to another. Depending on the competency of the FM structures in place, a workplace's configuration can have either a positive or negative impact on productivity (Tonono, 2008).

3.2.2 Workplace Management & Space Planning

The term "workplace" has expanded the traditional real estate life cycle process, to include and address services for, and support of an ever increasing mobile and global workforce (O'Toole, 2008). Space planning is an important part of facilities management, and McGregor and Then (1991) define space planning as the professional discipline that incorporates the planning and management of workspace features.

Facilities Management activities such as planning, provision, management and evaluation of workplaces are factors that McGregor and Then (1991) includes in the terms workplace management or space management. Space management points its main focus towards how the spatial resources can be used efficiently and how space may support the core businesses and their performance.

Workplace management is the process concerned with changing user needs, workplace and office layouts and concepts, space standards, evaluation of effects of different workplace solutions and design examples (Blakstad & Torsvoll, 2010). Nenonen et al (2009), define workplace management as the management of the workplaces as quantitative recourses including processes in design, change and use of workplaces. A manager, Daniel Linman (2010) posted in a management guide that in order to eliminate multi-tasking and help organize working space, a company should invest in the development of integrated workplace management strategies. He claims that this investment is one of the most effective ways to reduce a company's costs and increase efficiency of employees. These strategies let companies balance the needs and expectations of the employees. Further Linman argues that an employees' success is dependent on their ability to understand what workplace management is and how to implement workplace management approaches.

"Given that the essence of space planning is the fitting of an organizational structure into a building structure, then when choosing buildings to support their customers, apart from locational attributes, the facilities manager must also appraise the building shell, the building shape and the layout of its floor-plan" (McGregor and Then, 1991. P.119) McGregor & Then (1991) argue that flexibility embraces the evolving relationship between the individual as an employee, and the business as the employing entity, and their interface within the work environment.

As mentioned earlier, with regards to the knowledge workplace, we have witnessed a technological revolution that has liberated employees from the confines of the traditional workplace. The Internet combined with mobile technology has made it possible for employees to work from anywhere at any time. In many instances, according to Frank Knowlton from IBM; "Adaption of highly flexible work environments presents a unique opportunity for organizations to reduce costs associated with individual staff footprints and helps to attract and retain top talent" (O'Toole, 2008. p3).

The traditional way to implement real estate and facilities management is changed by this technological transformation in the workplace. It is no longer sufficient to focus only on the physical assets of the workplace, leases, buildings, layout, maintenance, etc. The disciplines of traditional corporate real estate [CRE] management with broader operational functions such as information technology, financial management, customer service and human resource management must now be integrated into facilities management by the enterprise (O'Toole 2008).

According to O'Tool (2008), workplace management has enhanced the traditional role of facilities and real estate management. The responsibilities associated with global CRE executives have expanded from overseeing and directing the traditional functions of real estate and facilities management to provide a highly dynamic workplace that meets the needs of a global workforce. These CRE executives bear titles like Workplace services Executive, Strategic Workplace Management or shared Corporate Services Management.

An important factor in space planning and workplace management is the ability to achieve an optimal match between timing of need and availability of supply. McGregor and Then (1991) define this factor as building utilization where the objective is to aim for the best match between demand for workspace to support business activities and its availability in terms of timing and duration of requirements. Utilization is a function of efficiency and supports the relocation of working groups, departments and functions. Figure 3-1 defines the demand and supply of workspaces.

Demand for workspace	Supply of workspace
Relates to appropriateness of the types of space and their distribution within a building or a portfolio of buildings.	Relates to the pattern of use of the available space and the range of tasks it is supporting.

Figur 3-1 Demand and Supply of Workspace (McGregor & Then, 1991)

3.3 Usability in Workplaces

Usability can be understood as *"the extent to which a system can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use"* (ISO 9241-11).

According to NS-EN ISO 9241, a building's usability can be defined by the three factors shown in figure 3-2; effectiveness, efficiency and satisfaction. Effectiveness describes whether the users can achieve what they want with the building. This factor deals with value creation and doing things right, and must be related to a strategic level within the organization. Efficiency expresses how long it takes to achieve what the users want. It is about doing things right, to facilitate efficient production and use of resources, have adequate space, equipment and support systems. Satisfaction concerns the users' experiences, feelings and attitudes related to the building (Blakstad et al, 2009).

Leaman (2000), states that the physical surroundings in a building contribute to the efficiency, effectiveness and satisfaction in the organization and depends on how well the buildings support their users' activities.

According to Granath et al. (2004), one should distinguish between the terms functionality and usability. Further they argue that usability is dependent on the situation in which a certain artifact is used, the context in which the artifact is designed, and the values of the persons involved, functionality alone does not make this artifact usable.

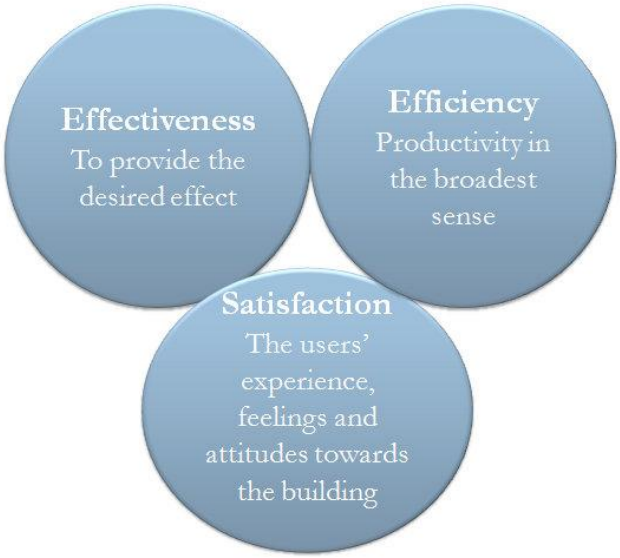


Figure 3-2 Usability (Blakstad et al, 2009)

The works of Becker and Steel (1995), Horgen et al. (1999), and Grantham (2000) support the approach of looking at buildings as means to fulfill strategic objectives and not only as a way to house people and activities.

WORKPLACE EVALUATION

The following sections of chapter 3 will address theory around workplace and building evaluation, starting with a general introduction to Post Occupancy Evaluation, from now on referred to as POE. The next section will present a selection of available methods of building evaluation and the tools used in these evaluation processes.

3.4 Post Occupancy Evaluation (POE)

According to Zimring & Reizenstein (1980), post occupancy evaluation POE can be defined as an examination of the effectiveness for human users of occupied designed environments. An international architectural practice specialized on POE defines building users as all people with an interest in a building. This includes staff, managers, customers or clients, visitors, owners, design and maintenance teams, and particular interest groups such as the disabled(Post Occupancy Evaluation, 2012). The general focus of POEs are on a single type of designed setting, and these tend to describe rather than manipulate, and are usually aimed at application. POEs vary considerably within this wide focus and three conceptual dimension are identified as useful in cataloguing them; generality, breadth of focus, and applicability (Zimring & Reizenstein, 1980).

3.4.1 Defining Post Occupancy Evaluation

Post Occupancy Evaluation can be defined as a systematic and formal process which can take place at different levels of effort. It involves a systematic evaluation of opinions, from the perspective of the users of a building, and assesses how well a building matches the users' needs. In addition, it identifies ways to improve building design, performance and fitness for purpose. The same building can be satisfactorily evaluated in a day or two, a month or two, or even over several months (Preiser et al, 1988).

The process is a phase in the building process that follows the sequence of planning, programming, design, construction, and occupancy of a building. The process of POE can be applied to any type or size of buildings. There are two primary dimensions of the POE process model: the levels of effort at which POE may be done and the major phases and steps for conducting a POE. In figure 3-3 it is shown how POE can be done in three levels, the first being indicative, the second Investigative, and the last diagnostic. Each of these levels are composed of three major phases; Planning, Conducting and Appliying. Determining the POE scope involves choosing one of the three POE levels of effort (Preiser et al, 1988).

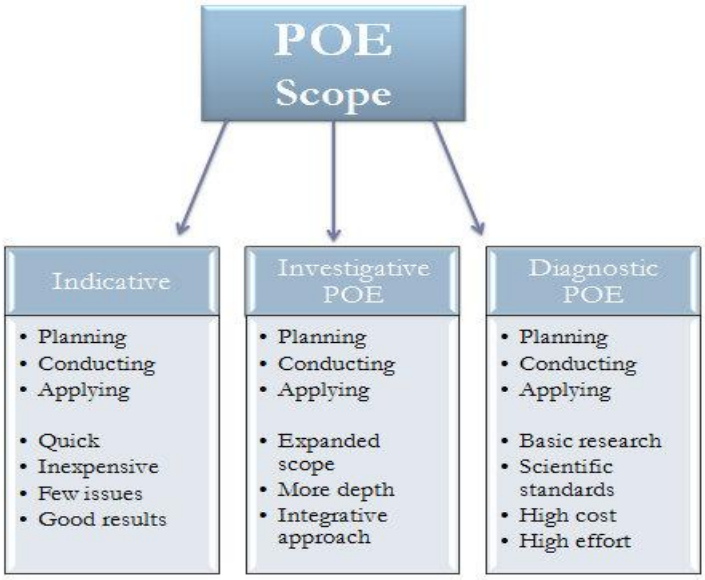


Figure 3-3 POE Scope (Preiser et al., 1988)

3.4.2 Purpose of Post Occupancy Evaluation

The purpose of post occupancy evaluation is to evaluate how a building works for its intended use, and uses the direct unmediated experiences of building users as the basis for this evaluation. In doing so, POE differs significantly from conventional surveys and market research. One purpose of post occupancy evaluation is to generate feedback from the evaluated building that can be used for immediate problem solving, learning and input to briefing and design. The entire

building industry can benefit from the sought out facts provided by the POEs and disseminated through information clearinghouses. This information may lead to improved building quality and better value for the dollar (Preiser et al, 1988).

Several purposes can be defined for POE and these includes fine tuning new buildings, developing new facilities and managing "problem" buildings. It is also considered valuable for organizations when establishing maintenance, replacement, purchasing or supply policies; preparing for refurbishment; or selecting accommodation for purchase or rent. It can also be used for troubleshooting during the period after the move-in, also known as the shakedown period, to correct unforeseen problems in the usability. POE is a an evaluation form that affects virtually all aspects of the building process from; feasibility, financing, site selection, architect hiring, planning, programming, design, documents, contracts, construction and building management (Preiser et al, 1988). Figure 3-4 lists some of the purposes that define post occupancy evaluation.

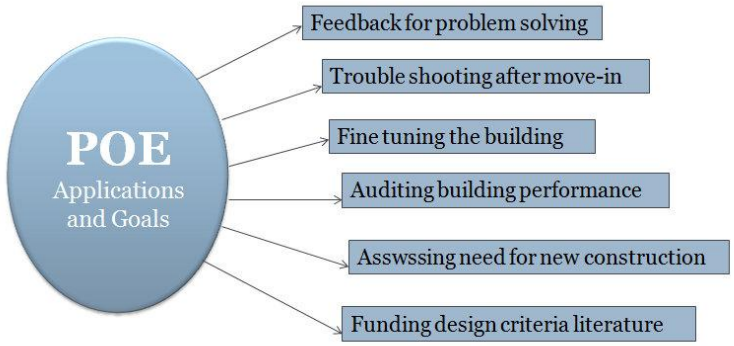


Figure 3-4 POE Purposes (Preiser et al., 1988)

EVALUATION METHODS FOR THE BUILD ENVIRONMENT

In order to choose the right methods for this research it is necessary to have a look at existing methods for workplace and building evaluation. The following section is a description of some of the evaluation methods and their tools, which can be used during a Post Occupancy Evaluation.

3.5 Guidance and Toolkit for Post Occupancy Evaluation

Encouraging good building design

The POE Guidance and Toolkit was inspired by many different POE approaches, and especially the "De Montfort" approach. The areas identified by this method can be chosen according to needs and preferences, but a fully adaption of the method will provide most insight. "Consequently this guidance covers the process from initiation of the POE at the inception of each project, through the construction and occupation stages up to and including a strategic review stage, offering tools to use in all of them" (Blyth et al., 2006)

3.5.1 Purpose of the POE Guidance and Toolkit

The purpose of the POE Guidance and Toolkit is to encourage good building design by allowing others to learn from the experience of constructing each building. Adaption of the POE Guidance and Toolkit should assist in bringing more rigors to the management of developing and operating buildings. By adapting the method the organization will establish easy links to preferred institution standards, for all to adopt and follow (Blyth et al., 2006). The guidance and toolkit is meant to provide feedback throughout a building's lifecycle from initial concept through to occupation. Future projects can use the information provided by the feedback whether it is on process of delivery or technical performance of the building (Blyth et al., 2006). Table 3-1 explains the several purposes of the post occupancy evaluation tool.

Short term benefits of POE	Medium term benefits of POE	Longer term benefits of POE
Identification of and finding solutions to problems in buildings	Built-in capacity for building adaption to organizational change and growth	Long-term improvements in building performance
Response to user needs	Finding new uses for buildings	Improvement in design quality
Improve space utilization based on feedback from use	Accountability for building performance by designers	Strategic review
Understanding of implications on buildings of change whether it is budget cuts or working context		
Informed decision making		

Table 3-1 Purposes of POE Guidance & Toolkit (Blyth et al., 2006, p.8)

3.5.2 How to Implement the POE Guidance and Toolkit

There are seven steps that needs to be followed in the POE Guiandance and Toolkit, and they can be found in figure 3-5. Step 1 identifies the need and probable aspects of the evaluation. Step 2 identifies issues that must be adressed and determine if the evaluation should be carried out internally or by an external consultant. The third step is a concise statement defining the purpose of the POE and how it can be achieved. In order to meet the needs identified in step 1, approaches are then selected in step 4. Step 5 is the stage where the survey questionnaires are distributed and collected, and the interviews, meetings and observations are arranged and conducted. Step 6 analyzes the feedback from the findings, and in step 7, information is fed into University policies and ones next project (Blyth et al, 2006).

The POE Guidance and Toolkit provides a toolkit consisting of six tools and techniques which can be used during POE evaluations. The tool kit consists of templates explaining how each step

of the evaluation process should be performed. A list of the tools, techniques and templates used in this method can be found in figure 3-6.

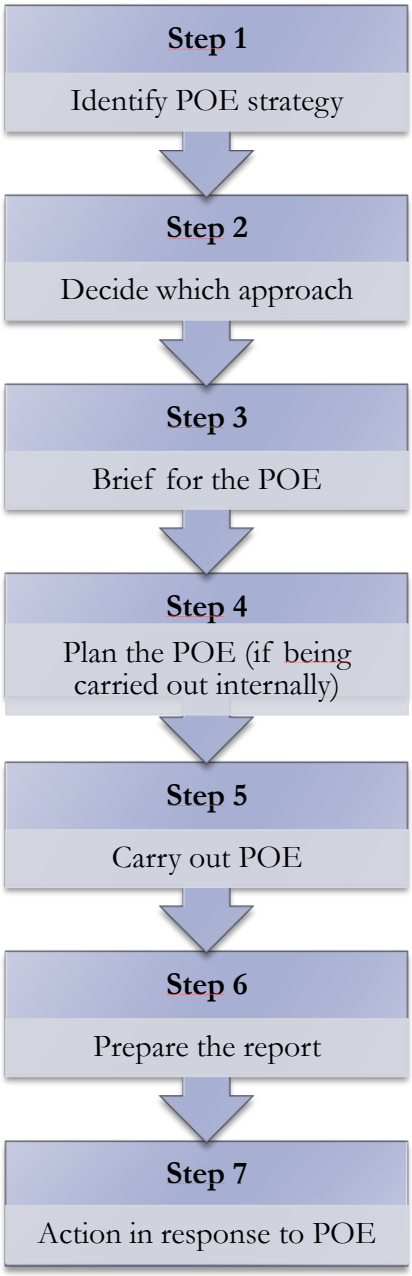


Figure 3-5: 7 Steps of Post Occupancy Evaluation AUDI & HEFCE (Blyth et al., 2006, p.6)

1. **STRUCTURE OF BUILDING BRIEF/TERMS OF REFERENCE**
2. **STATEMENT FOR PROJECT BRIEF/TERMS OF REFERENCE**
   - Template 1: POE Project Brief/Ters of Reference
3. **EVALUATION TECHNIQUES**
   - **a: Walk Throughs and Observation**
   - Template 2: Observation evaluation sheet
   - **b: Interviews**
   - **c: Focus Group**
   - **d:Workshops**
   - **e: Questionnaires: Operational Review Stage**
   - Template 3: User/facilities/estates
   - Template 4: Consultant team
   - Template 5: Contractors
   - Template 6: Sample occupant survey questionnaire
   - **f: Measurments**
4. **BENCHMARKING**
   - Template 7: Environment Benchmarks
   - Template 8: Elementa cost breakdown
   - Template 9: Operational costs
   - Template 10: Whole life cost model

Figure 3-6: Guidance to POE Toolkit (Blyth et al., 2006, p.17)

3.6 Serviceability Tools and Methods

Matching occupant requirements and facilities

"Serviceability is the capability of a building to perform as required. A serviceable workplace is capable of meeting needs, now and in the future. For building evaluations to be meaningful and effective, they ought to relate directly to a comprehensive description of what the 'customers' and other stakeholders need in a format and language that can easily be understood by nontechnical people." (Davis & Szigeti, 1996, p.59)

Serviceability Tools and Methods, from now on referred to as STM, is a set of macro, broad-brush tool appropriate for strategic overall decision making. The method includes tools to deal both with demand (occupant requirements) and supply (serviceability of buildings). STM can easily be adapted to reflect the particular needs of a specific organization, as it is an open and standardized approach. The STM method is appropriate for strategic overall decision making, and includes tools to deal both with demand (occupant requirements) and supply (serviceability of buildings). The primarily focus is to define the needs and expectations of the "customers" and provide direct links between occupant requirements (demand) and specific combination of building features (supply) (Davis & Szigeti, 1996). According to Davis and Szigeti, this method can be used in the process of selecting properties, review architectural designs and rehabilitation proposals, or plan new construction projects.

3.6.1 The Purpose of STM

The purpose of STM is to create a comprehensive framework and a process for involving all stakeholders, where possible. STM was designed to serve as a bridge between facility programs written in the user language and to outline specifications and evaluations written in performance language. This approach to programming and building assessment is a versatile method that can be used in many ways to help plan, cost, design, procure, use, maintain, operate, and manage facilities (Davis & Szigeti, 1996).

3.6.2 How to implement STM

According to Davis & Szigeti (1996), STM is an open, standardized approach that can be adapted easily to reflect the particular needs of a specific organization. The Serviceability Tools and Methods (STM) provide several tools, along with procedures, documents, and computer templates for using them. Davis & Szigeti (1996) explains that these are descriptive text profiles, functional requirements, bar-chart profiles, quantity spreadsheet profiles, a building loss features rating table, a footprint and layout guide, and building serviceability bar-chart profiles. The main tool of the STM method is a pair of matched multiple choice questionnaires. The scales used in these questionnaires assess more than 340 building features covered in over 100 topics of serviceability, and can be used separately and independently of the other. "Demand" is measured by a set of scales for setting functional requirements using nontechnical words. "Supply" is measured by a set of scales for rating the serviceability of buildings and building-related facilities using technical and performance terms to describe indicators of capability for combinations of building features. According to Davis and Szigeti (1996), STM is an open, standardized approach that can be adapted easily to reflect the particular needs of a specific organization.

STM does not itself prescribe solutions, and although the ratings provided by the questionnaires can complement other building evaluation techniques, they should not replace them (Davis & Szigeti, 1996).

3.6.3 How is STM calibrated?

According to Davis & Szigeti (1996), a building might provide more or less security, be more or less easily identified by the public, or be more or less flexible and able to cope with change. As a result the demand and supply scales are calibrated by a 9 to 1 gradation where 9 represent more and 1 represent less, rather than good to bad. 100 topics are covered by these scales, assessing more than 340 building features. Each set of scales can be used separately and independently of the other.

3.7 USE-Tool

Evaluation of usability

The method USE-tool is a framework for strategic space management, and is a result of a research project called "Usability – Methods and Tools". One of the most important results from this research project was a process description on how owners and facility managers in a building can collect user experiences from existing buildings. These can be used as input to programming of new buildings or in selection of new premises (Hansen et al, 2009).

The mapping process consists of a recommended process in five steps, where the last step is the preparation for an action plan for improved usability of a user's activities in a building. It is recommended that all of the steps are performed in order to get the best possible contextual knowledge of the usability. However, it is also possible to only use some of the steps in this tool depending on the desired focus and scope of the mapping process in each situation (Hansen et al, 2009). The 5 systematic steps are shown in figure 3-7.

3.7.1 Purpose of the Usability Tool

The purpose of the USE-Tool is to map out and evaluate a building's usability. The goal is to learn about users' experiences in order to improve workplaces. The method will give an in-depth knowledge that can be used as input for new projects (Hansen et al, 2009).

3.7.2 How to implement USE-Tool

Step 1: For what? – Define Evaluation

The goal of step 1 is to define the purpose and objective of the evaluation or mapping process, and to organise and plan how it should be accomplished. What will the evaluation be used for? What and who shall it include? In which terms should one evaluate? When it comes to usability it is primarily the effect and the contributions of the building that is regarded as significant to evaluate (Hansen et al, 2009).

In an initial phase, it is therefore wise to interview leaders in the specific organization, to determine the vision, objectives and strategies they have for the business, which principles do they have for the organization, whether they have special areas of focus in relation to how the building can contribute to the achievement of the objectives. What experience they have gained from using the building in general. In addition, the planning and implementation of the evaluation must be clarified in this step (Hansen et al, 2009). Figure 3-8 shows the process of step 1.

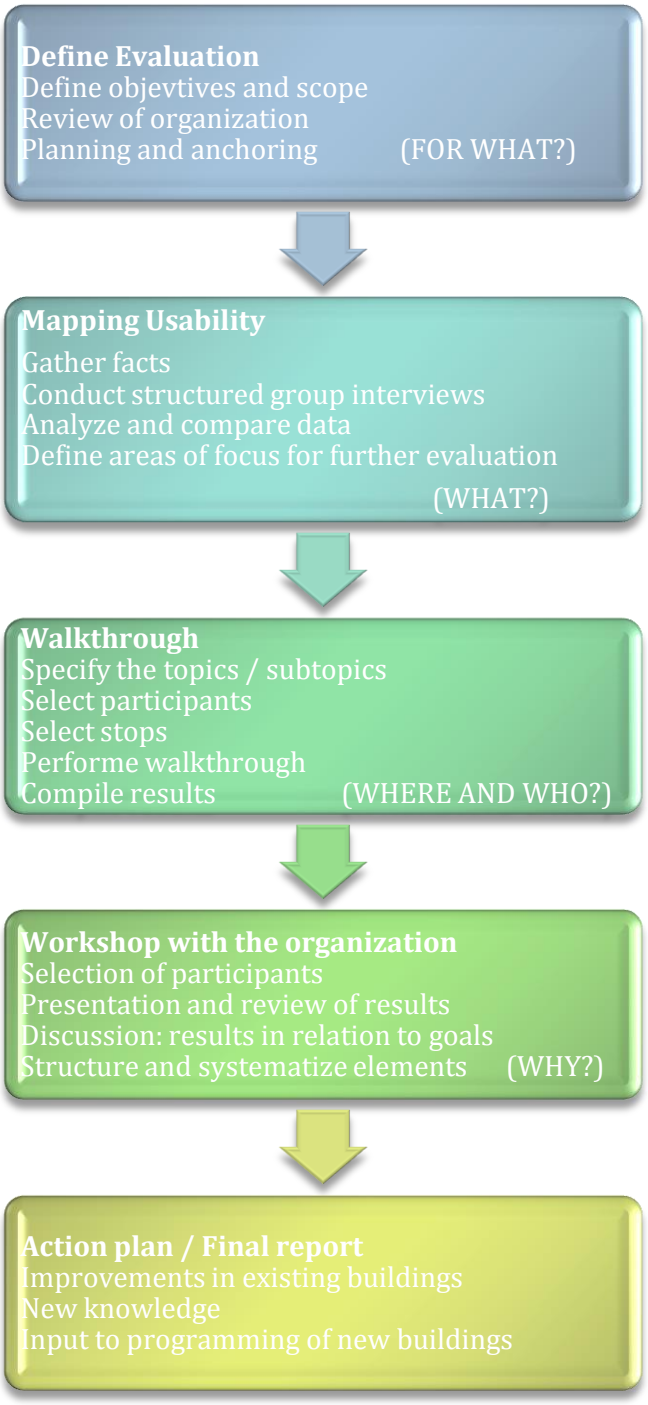


Figure 3-7 USE-Tool (Hansen et al., 2009, p.11)

Figure 3-8 USE-Tool Step 1

Step 2: What? – Mapping Usability

The objective of step two is to establish an overall picture of the usability of the entire building, or in some cases only parts of it, from a set of predefined parameters. Many businesses have already performed a survey to map out customer satisfaction, health, safety and security, operating conditions etc that can provide useful background and additional information. This should be included in this phase of the mapping process (Hansen et al, 2009).

The information is gained by conducting a structured group interview and gathering available information about usability. In the group interview the interviewees are asked questions about how the building supports the work processes. They are also asked about adaptability, universal design, the architecture, the office plan solution and the indoor environment, and how the building appears, and the building's support functions. The topics might be accessibility, cooperation across teams/departments, or from specific building categories, office buildings, meeting rooms, quiet, project customer contact, etc (Hansen et al, 2009).

The structured group interview can be skipped if the purpose of the evaluation is to look at specific topics or issues. The researcher can then proceed to step 3 after gathering necessary information. Figure 3-9 shows the process in step 2.

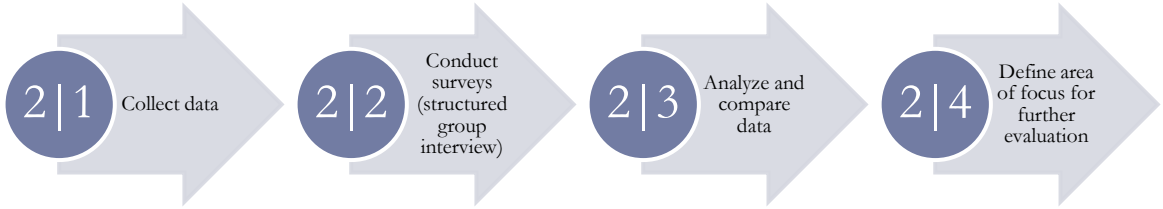


Figure 3-9 USE-Tool Step 2

Step 3: Where & Who? – Walkthrough

The purpose of this step is to obtain user experience for selected themes from step 2, and gain a better understanding for where and why the solutions are working well or poorly. The 3rd step contains a walk-through around the premises where the users can share their experience related to the topics discussed in the group interview performed in step 2. Confirmation on the selected findings that were observed and collected in the first two steps should also be discussed and examined further here. Central questions at this stage will be usability related to what and for whom. The aim of this walk-through is to collect user experiences and to do a further depth research. It should provide contextual knowledge of how different solutions work, and avoid copying undesirable solutions from a project or business to another. The walk-through is an on-site inspection to map the usability of the space in a qualitative way. The walk trough gives the designer a unique possibility to observe the users as well as receive further information on the issues (Hansen et al, 2009).

Walk-through is the term for a method where one goes for a walk around the premises to inspect and assess various aspects of a building's usability. There are different variants of how a walk-through can be carried out. It ranges from a completely open form of evaluation based on spontaneous and subjective assessments by random participants at the time, to predefined stopping points, evaluation criteria and selected participants. At the stopping points users' experiences related to the specific subject is discussed. In some cases there are several topics one

wants to get a deeper knowledge of. It may be necessary to implement a number of walkthroughs with different themes, different stops and different participants. It is important to consider the composition of the group of participants in terms of the purpose of the walk-through, as this could have an impact on findings that emerges (Hansen et al, 2009).

An important effect of the walk-through as a method is the learning effect it provides when the various participants gain insight into each other's requirements and needs, and the assessment of usability related to specific physical solutions. In some cases, there will be no need to go in depth at this point, as one might get a satisfactory amount of answers from the survey. In this case one can proceed to stage 4, the workshop (Hansen et al, 2009). Figure 3-10 shows the process in step 3.

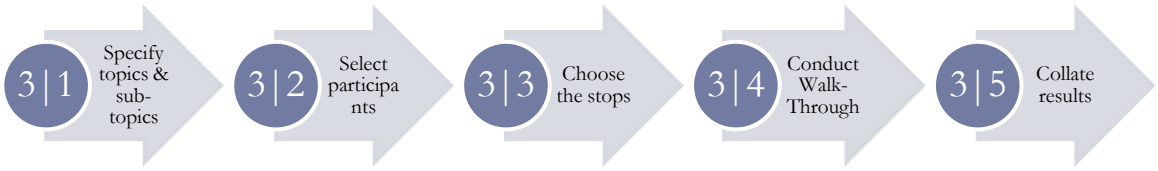


Figure 3-10 USE-Tool Step 3

Step 4: Why? - Workshop

The 4th step in the USE-Tool is a workshop where the results from the group interview and the walkthrough are summarized and discussed to reveal possible improvements. The workshop is organized by setting the findings in the context of the organization's main vision, aim and strategy. With a given topic or defined problem for discussion, people with different backgrounds can work together in an organized work setting during this workshop. The workshop should have participants from the user organisation so that the evaluation of the usability will be consistent with the objectives that are formulated by the organization (Hansen et al, 2009).

The main purpose in this step is to find out why things work the way they do or if they do not work. An assessment of usability will be related to a strategic level in the organization. The workshop will focus on areas that one would like more knowledge on, and it is important to address both positive and negative issues related to the usability. A walkthrough might have different purposes in different projects, but it should primarily provide a basis for development and preparation for an action plan. In each case the "Why" questions are important when trying to understand what knowledge can be transferable to other buildings, and what knowledge is related to the interaction between user and building (Hansen et al, 2009). Figure 3-11 displays the process in step 4.

Figure 3-11 USE-Tool Step 4

Step 5: Development of Action Plan/Final Report

The aim of step 5 is to document and summarize the most important findings from the previous steps in the USE-tool. This should support framing the plan of action, or correspond to the results from the study otherwise. If the plan of action is done, this reporting should refer to the purpose that was defined in step 1. The results from evaluations of usability can be used to improve the solutions, to plan new construction, and to gain greater knowledge about the relationship between the building and its users (Hansen et al. 2009).

It is recommended that findings from this evaluation should be structured in an appropriate manner so that it can easily be found again and used in a manner that contributes to gaining a higher level of knowledge through several projects. If the purpose of the evaluation is to obtain new knowledge about buildings in use, a final report would be a suitable format to present the results in. On the other hand, if the purpose of the evaluation is to make improvements to existing buildings, or input to programming of new buildings, an action plan would be a better format for the results. The action plan must describe the necessary actions, responsibilities, required resources, priorities and any assumptions/dependencies one must take into account. Lastly it must point directly back to the purpose of the mapping process, and the organization's vision, objectives and strategies (Hansen et al. 2009). Figure 3-12 displays the process in step 5.

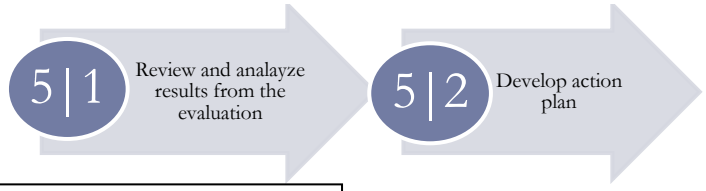


Figure 3-12 USE-Tool Step 5

3.8 Design Quality Indicator (DQI)

Evaluation of the design quality of buildings

The Design Quality Indicator, from now on referred t as DQI, is a tool based on a questionnaire with questions that are relevant at any stage in the development of a building and should ideally be used in every key stage of this process. DQI can be used by all stakeholders involved in the production and use of buildings. The tool can be revisited and re-used throughout the life of the project, and it can also be used repeatedly at a particular stage (Rogers, 2004). "The DQI tool assists a building's procurement team to define and check the evaluation of design quality at key stages in the development process" (Rogers, 2004, p.6). Figure 3-13 is a visualization of the basic concept of the DQI tool; functionality, impact and build quality.

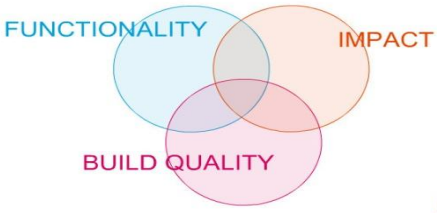


Figure 3-13: Basics of DQI: Functionality Impact Build Quality (Hawkins, 2010)

High on the agenda of all building commissioners, financiers and developers is a projects context of finance, time and environmental resources. Better

deployment of these resources is dependent on good design quality, and the DQI addresses this by advising professional input. A particularly important factor in the briefing stage is the use of a DQI facilitator (Rogers, 2004).

3.8.1 Purpose of the DQI

The purpose of this evaluation technique is to help gain more value from the design of buildings, and to assist in improving the quality of buildings.

3.8.2 How to implement the DQI

The pioneering evaluation method for quality of buildings DQI is developed as a questionnaire and has been developed into an easy to use web tool that can be found at DQI Online. Depending on what phase the project is in, DQI Online provides four versions of the tool. The questions displayed are automatically adjusted for each phase (Rogers, 2004). The four tools are presented in table 3-2.

The Brief	Allows the project aspirations to be clearly set, addressing the opinions of the stakeholders, and can be used through strategic briefing stages to detailed brief to set priorities and answer questions such as: What do we want? Where do we want to spend the money?
Mid - Design	Allows the client and design teams to check whether early aspirations have been met and allows adjustments in focus and quality to be made accordingly. It can be used throughout the design phase when the project can still respond to change.
Ready for Occupation	Is used immediately before occupation to check whether the brief/original intent has been achieved.
In Use	Is used in order to receive feedback from the project team and the building users to help make improvements for the next project, and can lead on to more thorough post-occupancy studies.

Table 3-2 Four versions of the DQI Tool (Rogers, 2004 p.4)

The DQI is a tool with three phases; the DQI questionnaire, the DQI weightings and the DQI visualization. These phases will be explained further.

The DQI Questionnaire

The DQI questionnaire consists of 114 questions looking at the functionality, build quality and impact of buildings. It is a short, simple, and non-technical set of statements that collect the views from all stakeholders (Rogers, 2004). The statements are listed under each of the three categories in figure 5. When completing the DQI questionnaire it is possible to choose between six answers to each statement by grading them from 'Strongly Disagree' to 'Strongly Agree'. The statements are general, and should be answered according to each person's individual perception (Construction Industry Council, 2006). Some examples of statements in the DQI questionnaire include: "The building easily accommodates the users' needs"; "The lighting is versatile for

different user requirements"; "The building provides good security"; "The circulation spaces and common areas are enjoyable"; "The building is sited well in relation to its context"; "There is sufficient daylight in the building"; "The building is energy efficient"; "The building makes you think" (DQI Online, 2006). Table 3-3 presents an overview of the DQI Questionnaire.

Functionality	Is concerned with the way in which the building is designed to be useful. The statements are split into use, access and space
Built Quality	Relates to the performance of a building fabric. The statements are split into performance, engineering and construction
Impact	Refers to the building's ability to create a sense of place, and to have a positive effect on the local community and environment. The statements are split into character and innovation, form and materials, internal environment and urban and social integration

Table 3-3 DQI Questionnaire content (Rogers, 2004 p.6)

The DQI Weightings

There are two types of weightings found in DQI. The first allow results to be distorted depending on how the respondents judge the success of various aspects of the building, and the other can be applied indicating whether aspects are fundamental, added value or excellence as described in table 3-4 (Rogers, 2004).

Fundamental	Relating to factors which the building must achieve in order to fulfill its purpose
Added Value	Relating to factors that will enhance the building's usefulness and pleasure value
Excellence	Relating to factors that make the design sparkle as a whole and help create a building of distinction

Table 3-4 DQI Weightings (Rogers, 2004 p.7)

The DQI Visualization

The DQI is presented graphically in ways that highlight comparisons between different aspects of the evaluation. These aspects can be groups of respondents where the views of buildings eventual users are compared with those of the delivery team. Another aspect would be the stages of a project, from the opinions established at the inception stages of a project, and how these are being achieved by the design. The last aspect for comparison can be the schemes within a portfolio of projects (Rogers, 2004).

3.9 Work Environment Diagnosis Instrument (WODI)

Measuring employee satisfaction in new offices

3.9.1 Purpose of WODI

The purpose of the Work Environment Diagnosis Instrument, from now on referred to as WODI, is to find out if organizations' expectations were actually fulfilled and housing goals were actually achieved. Another purpose is to provide valid and reliable data to support future decisions on housing or re-housing. The developers of this method believed that although there were many existing questionnaires and observation tools in this field of work, they paid little if any attention to the physical work environment (Maarleveld, 2009). The new evaluation toolkit, "Work Environment Diagnosis Instrument (WODI)", was developed to better suit the need of more appropriate evaluation tools for new office environments that make flexible use of different types of workspace. This method includes four different tools for POE on different levels as described in table 3-5; WODI Classic, WODI Light, WODI key performance indicators (KPI) and the space utilization monitor (SUM). WODI Light will be described further as an example for this method (Maarleveld, 2009).

WODI Classic	WODI Light	WODI key performance indicators (KPI	The space utilization monitor (SUM)
A tool to support a diagnostic POE	A quick tool that can be used in an indicative POE	In order to be able to benchmark buildings on employee satisfaction and dissatisfaction	To measure data on occupancy ratios

Table 3-5 WODI (Maarleveld, 2009, p.3)

The main purpose of the WODI Light questionnaire is to measure employee satisfaction about their work environment. It is a less thorough questionnaire that has been downscaled from the WODI classic one and focuses on issues that have turned out to be of outmost importance to overall employee satisfaction and labor productivity. This questionnaire is less-time consuming, but is still a scientific evaluation tool that can be used in case of an indicative evaluation (Maarleveld, 2009).

3.9.2 How to implement WODI Light

This questionnaire contains 39 questions and takes the respondents about 10 minutes to complete. The questions are divided into themes and are evaluated on a five-point scale, a ten-point scale or as multiple choice questions. Themes included in this questionnaire are; organization and work, the building, the direct work environment, privacy, the workplace, concentration, communication, archive, IT, indoor climate, external services and perceived work productivity. The questionnaire is web based so data are collected through internet (Maarleveld, 2009).

3.10 Survey on office environment quality

Evaluation of a work place model

The Survey on Office Environment Quality was developed by Lukas Windlinger Inversini as part of his ongoing PhD thesis and has been altered and further developed for several years. As this survey serves as the base of the case in this research and will be elaborated on further in chapter 5, this chapter will only give a short description of the method.

3.10.1 Purpose of the Survey on Office Environment Quality

According to the developer of this survey, the main purpose of performing an office environment evaluation is to define a baseline measure before a reconstruction project. The method should provide an opportunity to measure the effects of the achievements in a post reconstruction analysis to prove which features was improved and which were not. The other purpose would be to evaluate the employees' working situation before a reconstruction project in order to learn about the people, how they work, and what they need in order to perform their work.

3.10.2 How to implement the Survey on Office Environment Quality

The Survey on Office Environment Quality is divided into several sections based on themes. The sections in this survey are; work effectiveness, office environment, office atmosphere, communication and knowledge sharing, work engagement, individual work performance and work activities. There are several statements in each section and they are mostly rated from strongly disagree to strongly agree, with the exception of office environment, which is rated from very unsatisfactory to very satisfactory. The respondents are also asked to estimate where in the building they spend most of their working time and what percentage of time they spend on certain activities in their work. Table 3-6 shows the content of this survey questionnaire and how it is divided into sections.

Work Effectiveness	How does the office support the work?
Office Environment	How satisfied are people with their office environment?
Office Atmosphere	How do people experience the atmosphere in the office? How well does the office building perform in providing certain qualities?
Communication and Knowledge Sharing	How do people experience the communication and knowledge sharing?
Work Engagement	How do people feel about their work? Interpersonal engagement in work zones
Individual Work Performance	How do people assess their own work performances
Work Activities	Questions about collaboration

Table 3-6: Survey on office environment quality

3.11 Discussion of Methods

In order to decide what methods would be most beneficial to use in this thesis, it is important to compare the methods and their tools. In the previous chapters the purpose of each of these methods was listed. These purposes explain what the developers wanted the methods to achieve. By comparing the purposes of each method with the aim and purpose of this research it should be possible to narrow it down to the method best suited for this thesis. Table 3-7 shows a comparison of all the methods previously mentioned in this chapter.

Every method contains a questionnaire which indicates that this is considered a valuable tool to use in workplace evaluation. Several methods also use walkthroughs and focus groups as additional tools to the questionnaire. The difference between a focus group and walkthrough (nominal group) was explained in chapter 2, research approaches and research instruments. The main difference is that, during a walkthrough, respondents are asked to first share individual input and then discuss their opinions as a group. In a walkthrough respondents also move from location to location in the building to discuss its attributes, whereas in a focus group they sit in a room during the interview. Walkthrough is therefore chosen as a supplement tool to the questionnaire in this thesis. The reason is that this method will be used in evaluation of the built environment and it is therefore beneficial to take the respondents to the physical locations they are discussing. Having the opportunity to collect the participants' individual opinions on paper before the discussion is started is also considered beneficial for this research. A focus group might be just as informative in many other evaluation situations. An example could be a marketing evaluation of a commercial product where you can simply bring the object into the room with the respondents.

Method	Purpose	Tools
POE Guidance and Toolkit	To encourage good building design by allowing others to learn from the experience of constructing each building.	1. Walkthroughs and Observation 2. Interviews 3. Focus Group 4. Workshops 5. Survey Questionnaire
STM	To create a comprehensive framework and a process for involving all stakeholders, where possible.	1. A pair of matched multiple choice questionnaires 2. Descriptive text profiles 3. Functional requirements 4. Bar-Chart profiles 5. Quantity spreadsheet profiles 6. Building loss features rating table 7. Footprint and layout guide 8. Building serviceability bar-chart profiles
USE-Tool	To map out and evaluate a building's usability based on users' experiences.	1. Define Evaluation 2. Mapping Usability 3. Walkthrough 4. Workshop with the organization 5. Action plan / Final report

DQI	To help gain more value from the design of buildings, and to assist in improving the quality of buildings.	1. DQI Questionnaires adapted to different phases in a project: a. The Brief b. Mid-Design c. Ready for Occupation d. In Use 2. The DQI Weightings 3. DQI Visualization
WODI	To measure employee satisfaction about their work environment.	1. WODI Classic 2. WODI Light 3. WODI Key performance Indicators (KPI) 4. The space utilization monitor (SUM)
Office Environment Quality	To find out if organization's expectations were actually fulfilled and housing goals achieved in the new workplace.	Questionnaire

Table 3-7: Comparison of evaluation methods

As a conclusion to the choice of evaluation method, this research will develop and test a method for workplace quality. This method will include the tools survey questionnaire and usability walkthrough, which will be used according to USE-Tool presented earlier in this chapter. The survey questionnaire will be based on the Survey on Office Environment Quality. This is the questionnaire already tested by the pilot case company that will be presented in chapter 4. The usability of the survey will be assessed by selected participants after the pilot case, presented in chapter 5, is performed.

3.12 Can Evaluation of Workplaces contribute to Improvements and Further Development of Workplaces for the Future?

The last part of the theory chapter will have a look at previous research on how workplace evaluation can contribute to improvements and further development of workplaces for the future based on an article; Can usability evaluations drive innovation? by Blakstad & Hansen (2012).

Several methods and tools have been developed to evaluate buildings and their usability. Demands and use of a building will change over time and it is important to keep track of the user's activities and how the building supports them. Blakstad & Hansen (2012) states that evaluations are means to understand usability as it is experienced by the users of the building.

Blakstad & Hansen (2012), states that it is important to know the interaction between organization, facilities, and technology in order to improve existing buildings, and to learn and to develop new and improved facilities. The evaluation must impact on the actual practice of developing and operating facilities, in order to improve and develop usability of the building and the users' experiences.

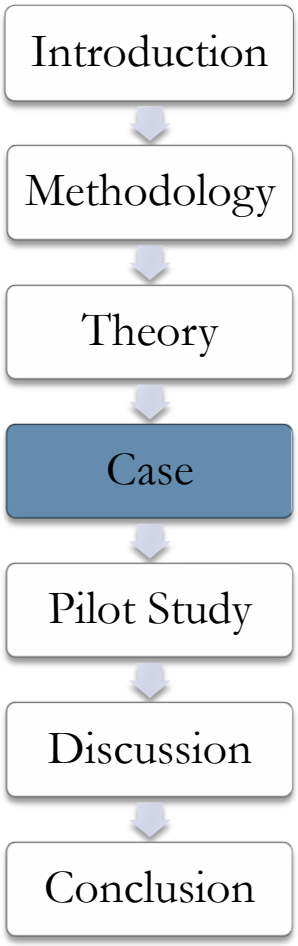
The study from the article concludes that it is possible to for usability evaluation to drive innovation. However, this requires that the usability evaluations are part of a larger development project. Blakstad & Hansen (2012) argue that "usability evaluations can only be drivers for innovation in cases where key players have awareness and competence, and where the need for change is seen as urgent enough to justify the amount of resources needed to both analyze the situation and implement the change".

The question raised in this thesis on how evaluation can be used to improve and further develop workplace design, will be further discussed in chapter 6 and 7, discussion and conclusion of this thesis.

4

Case

A Method for Workplace Evaluation



4.1 A Method for Workplace Evaluation

The survey developed in this thesis and the pilot study of its use will serve as the case in this thesis. The development of this survey will therefore be explained further in this chapter. The process is initiated by the Survey on Office Environment Quality, which is developed by Lukas Windlinger Inversini. Telenor serves the pilot study in this thesis and the goal is to adapt the previous mentioned survey to fit the purpose of projects in Telenor Real Estate. As mentioned in the research problem, it was requested by the Head of Workplace Management at Telenor Fornebu, that they need a survey focusing more specifically on the assessment of functions and use of space on the premises, as they believe this might be a more effective way to evaluate the workplace and to get the employees more motivated to respond.

Expert interviews from the developer's and user's perspective was conducted to collect the necessary information about how survey can be used as a method for evaluation of workplaces. This chapter also explains how the survey was developed, why it was developed and the purpose of the survey as an evaluation tool for post occupancy evaluation. Further this chapter will document how the survey was adjusted and adapted to fit the purpose of projects in Telenor Real Estate. This information is collected through an expert interview with the Head of Workplace Management at Telenor Real Estate.

The newly developed Survey on Workplace Quality will be presented in chapter 6 as a result of this research. This survey is developed according to the needs of Telenor Real Estate for their Workplace Development and Improvement projects. The method development process in this case is shown in figure 4-1.

Figure 4-1 Method development process

4.2 Survey on Office Environment Quality: Expert Interviews

This section provides a summary of the knowledge received through the expert interviews conducted in this thesis. Two interviews were conducted in Zurich, Switzerland, with the developer of the "Survey on Office Environment Quality" and his research associate at the Zurich University of Applied Sciences. Another interview was conducted with the Head of Workplace Management at Telenor Real Estate. The purpose of these interviews was to collect important data from a developer- and user perspective of an evaluation method. Telenor Real Estate Workplace Management has in several occasions attempted to adapt the evaluation method, developed by Lukas Windlinger Inversini, to fit the purpose of the workplace projects within the organization. In order to determine what the developer and user define as the purpose and desirable achievements of this evaluation method, these interviews were conducted to portrait two different points of views; the scientific researcher and the workplace developer's.

The interviews were separated into four main sections with the titles; Purpose of the Evaluation, Administration of the Survey, Survey Design, and Previous Test of the Survey. The interview guide served as a pattern for the interview, and depending on the interviewees' individual experience and expertise, questions and sections was added, altered or eliminated. The full interview guide can be found in Appendix 6. The material presented in chapter 4.2.1 – 4.2.3 is collected through the expert interviews and is presented as results verified by the interviewees.

4.2.1 Lecturer & Senior Researcher at Zurich University of Applied Sciences (ZHAW)

This interview was conducted with the developer of the Survey on Office Environment. The details regarding this interview can be found in Appendix 7. The following section is a rendering of this interview.

The Purpose of the Evaluation

The main purpose of performing an office environment evaluation would usually be to define a baseline measure before a reconstruction project starts. The evaluation should provide the opportunity to measure the effects of the achievements in a post reconstruction analysis to prove which features of the premises were improved and which were not. The other purpose would be to evaluate the employees' working situation before a reconstruction project in order to learn about the people, how they work, and what they need in order to perform their work.

In order to determine what information is most important to retrieve in order to further develop office design, the organization will first of all need to know the frequency in which spaces are being used, for how long, and for what activity. However, there is more information that needs to be collected in order to further develop office design. It is crucial to know why pieces or parts in an office are designed in a certain way. The design can have a specific purpose and might be intended to express something in particular; e.g. appreciation towards employees or to display the organizations' culture to customers.

Design developed with a purpose in mind, should be well documented so that when future reconstructions are planned it will be clear why the office design was developed in a certain way. Every office or every part of an office communicates a certain message; who is working there, what is the relation between the employees and the employer, and so on. These are facts that can be very important if an organization wants to develop the office systematically.

The intention, or aim, of the survey was to provide an evidence based survey that determines what works and what does not work, based on the assessments from the employees. The pre- and post reconstruction situation can be compared, and also benchmarked towards different floors or buildings. For business partners it is usually sufficient to show that the situation improves. Management might in many cases be aware of potential problems, and the survey can be a way to confirm that the employees feel the same way.

A survey covering only the before situation is completely meaningless because you do not have a point of reference or anything to benchmark towards. If the organization have benchmarks from within the organization then the before measures will be interesting because it is possible to see

how the organization performs in relation to others. In a before/after comparison the before measures are completely uninteresting until you have the after measures, because only then can you see the actual change. The office space might under-performs in some dimensions, and then the researchers can go with the management responsible for the project to have a look at why.

Administration of the Survey

For practical reasons the survey should always be done online. Preferably, each and every participant should be invited by email from a list of all employees. Another option is to collect all the background information about the participants from the HR department in order to generate emails to each employee with a personal invitation and individual links to the survey. This way the participants can only answer one time and also stop the survey to continue later. With this method the participants may be concerned with the level of anonymity provided in the survey. To meet this concern an email should be sent out to all the participants approximately two weeks in advance with information that all the analyses will be done in aggregated forms for groups and that only the researchers and none of the supervisors will have access to the data. The email should contain information that the organization is not interested in what the participants are saying personally, but what the people in the office environment is saying as a group.

In case of any legal difficulties regarding anonymity, the survey can be sent out with the same survey link to every participant so that it would not be possible to trace people's identity. By inviting the participants with a personal message and/or having the CEO of the organization to state that it is very important for the development of the organization that they fill out the survey, it is more likely that the survey would achieve a high response rate.

Analyses of results are done depending on the purpose of the specific project. Benchmark over time or between floors or buildings might in the long-term run be the most important. The research team always tries to identify the relationship between different variables; e.g. if factors in the office environment are optimized, the performance and/or satisfaction will also improve. It is usually someone in the organization who has to present the results to someone higher up in the hierarchy. They prefer simple bar charts without statistical significance or any other complicated statistical visualization, which is sufficient for this specific purpose.

There can be many reasons for a low response rate; holiday season, end of the year etc. More important is the number of answers collected. Five to ten responses are not enough to make an analysis, but with thirty it is possible to assume there will be a normal curve. Thirty would be the lower limit, because then it is more or less representative for the sample.

The Survey Design

The survey was divided into sections based on research interest and practical interest. Work engagement, individual work performance and work effectiveness are all a type of outcome issues. These are the ones that can relate to the office environment in order to examine whether or not the office environment has an impact on performance. The purpose of the section on office environment and office atmosphere is rather straight forward to capture the assessments of the employees' perception of the built environment.

The next sections are knowledge-sharing, communication and work activities, and those are three aspects of the actual jobs people are performing. The assumption was, and still is, that different

types of jobs in terms of different activities, needs different work environments. Sections on work activities and communication and knowledge sharing assess if there is any work related difference in employees' activities that are important for the workplace design. It is important to identify if the work being performed in the workplace is individual-based or team-based, as this establishes their need for office design related to single offices and/or open landscape. This way it is possible to identify why an assessment of the environment might be rated badly. Is it because people are performing different jobs, or because they are engaged in different activities? The main difference between the longer and shorter version of the Survey on Office Environment Quality is that the longer one contains more outcome measures; hence it is not only performance being measured. This version does also address job satisfaction and social climate, because these are outcome measures as well.

The following table (table 4-1) is based on the information provided in the interview by the developer of the Survey on Office Environment Quality. It contains the sections of the survey and states the purpose of them as explained by the developer.

Section	Contents of this section	Purpose of this section
Office Environment (AP1 – AP25)	Questions in this section are considered important by either the business or architecture department. Questions are related to the work station.	To analyze to what degree the employees are able to modify or change their environment in terms of amount of lighting or temperature etc. Meant to capture all the assessments of different aspects of the environment
Office Room (AU3 – AU12)	Directed to the different options of locations the employees have to their disposal, e.g. meeting rooms, work stations etc. Questions are related to the room containing the work station.	To capture the assessments for the office room.
Crowding (CR1 – CR4)	Crowding is a specific form of stress experience. People in a crowded workplace might feel that they lose control of the environment because several things are going on at the same time. People in a non-territorial open landscape situation might be afraid that someone might be using their desk or take their chair and this is perceived as stressful in a crowded situation.	To analyze to what degree the employees feel any stress or pressure related to the number of people in the work zone.
Communication (KM1 – KM8)	Does the design of the environment fit the need for task related communication?	To find out if the work environment supports the type of communication each employee would need to complete their tasks
Location (STAO)	Questions in this section are there because it is interesting for the architects and portfolio managers. Discusses subjects outside of the building, like public transportation, parking lots and etc	To assess the environment beyond the office building

General Work Environment Satisfaction (AZU1-AZU3)	This section contains questions related to the employees' comfort in their work environment and storage possibilities	To measures employees' satisfaction with the furniture
Environmental Features (EFR)	The section includes lighting (daylight and artificial light), indoor climate, and privacy and workplace appropriateness Workplace appropriateness rates the environment according to how it fits the tasks	To measure employees' satisfaction with important factors of the work environment
Control (K)	Research has shown that it might be more important for people to have a sense of control over the environment than the actual quality of the environment itself Control gives the employees the opportunity to change factors in the environment that they are not pleased with; e.g. lighting, temperature etc.	To measure the degree of influence the employees have on their work environment
Distractions	Interesting because interruptions might be good and bad at the same time but for different people, depending on if the person is the one interrupting or the one being interrupted Distractions are an important part of the work process in team based work task, but might be annoying when people are working individually	To determine the frequency of distractions in the workplace and evaluate how it affect employees' work process
Noise (L)	This section focus on the sources of noise and not the overall acoustics environment In some cases it is sufficient to rate the overall acoustics environment	To evaluate the noise situation
Privacy (TP, CP & P)	Differentiated between task privacy and communication privacy	To evaluate the degree of different types of privacy felt by the employees in the workplace
Social Climate (ST)	Questions about social relations and cooperation between employees	To assess the interpersonal relations between the employees in the workplace
Health Symptoms	Includes all kinds of psychosomatic- or stress related symptoms	To gather information about the employees work related health

Work Engagement (OLBI)	Measure for burn out, but can also be used for an engagement measure	
Individual Work Performance (PR)	Employees are asked to rate a self-assessed performance Hard to measure performance.	To measure how the employees rate their own performance
Summary Questions (ZF)	Sums up several of the sections previously presented	To compare these results with the ones collected in the previous sections
Job Description (KFZA)	General question about work positions and responsibilities	To state the employees position in the organization
Demographics	Age, gender and tenure are important. Degree of employment might also be included	To give background information to the researcher

Table 4-1 Contents of the one of the larger versions of the Survey on Office Environment Quality

The length of the survey is always an issue. Project partners from business prefer that it takes a maximum of 15 minutes complete the survey, but 5 minutes would be better. Therefore it is not the number of questions, but the time it will take people to go through the survey and respond that matters. The time people are willing to spend on the survey also depends on the design of it. If it is possible to find a way to make it "fun" to fill out the survey, people might also be willing to spend 20 minutes on it. The survey should look nice and appealing.

Experience with Earlier Conducted Surveys

The research team cooperating with Lukas, gathered to discuss the survey after it was developed. They criticized the questions in order to get a precise wording. Further they performed a large pilot with 4 participating business partners and tested the questionnaire in all four organizations. The main issue obtained from the feedback was the length of the survey. Another issue was the rather personal questions related to the work environment like social relations. Comments were made on the wording, and suggestions were made to add additional questions. Some questions in the survey would appear to be similar and the fact was that most of the questions came from specific sets of survey questions from research papers. These questions were directly put into the survey. This was the reason for the overlapping questions, but this process of adding questions was important for the development of the questionnaire.

In order to figure out if respondents are replying to the survey sincerely, the survey should try to detect certain patterns in the respondent's assessments. They might indicate the same value through the whole section of the survey or answer in a diagonal pattern, but then again, who would make the effort to answer the survey incorrectly if they could simply just not answer? This is why the survey should not include "locked questions" as they would force the respondent to answer and it might not be a correct answer if they would rather not answer that specific part. It is difficult to determine if there are certain questions that the respondents seems to skip more

than others. It is difficult to say if there is any significance in the observations. Respondents might seem to skip some of the questions regarding social relations and performance measures, but in general the response rates are different from one question to the other. Open ended questions are not part of the original survey on office environment quality and should be added to let the respondents share their comments. This is even more important when you try to shorten the survey and might leave certain subjects in the dark. The survey should be open for the respondents for about two weeks and should end on a Monday, because employees tend to either finish their tasks on Friday afternoon or over the weekend.

4.2.2 Research Associate at Zurich University of Applied Sciences (ZHAW)

This interview was conducted with the research associate working with the developer of the survey on Office Environment Quality. The details regarding this interview can be found in Appendix 8.

The Purpose of the Evaluation

If the purpose of the evaluation is to determine if there is any effect of a change in the workplace design and/or layout, methodologically it then makes sense to have a prior and post change evaluation. This is necessary in order to be able to benchmark the employees' behavior and satisfaction in the pre- and post reconstruction phase. A suggestion is to collect information beyond the physical changes, like background information about the organization in order to eliminate other influences that might have occurred during that same time.

Depending on what type of change the organization wants to conduct, there will be different types of information that needs to be collected. If they want to make operational changes, they would need to address deficiency in the current workplace. If they want to make more strategic changes related to larger changes in the workplace, they need to address organizational issues related to organizational development. If the purpose of the evaluation is to figure out if the lighting is up to the proper standard or not, the organization can simply measure the current lighting situation. Whereas if the organization, in order to support the core business, have to improve arrangements in the workplace; they need to engage with totally different stakeholders.

The information gathered in the first phase should be used in professional design work to derive new concepts, for example; if you look at activity patterns that you know will not change because they are task related. This type of information can be used, but it should also be discussed with the users themselves in order to inform them and enable them to make decisions within a certain scale. In this way they can have a stake in the project as well.

The Survey Design

The current "Survey on Office Environment Quality" contains scales addressing the physical environment, some that are targeted towards the employees' activity patterns, and some that are targeted to perception of work in general, or performance and so forth. Scales should not be skipped just because they seem unnecessary as they, in any case, provide important background information.

In survey and scale design you duplicate concepts, hence there will not only be one question regarding the lighting, but multiple ones. In order to downsize the survey, multiple questions can be combined if the question is formulated in a good way. The research team is already practicing this assessment method to develop several versions of the survey and the scales. In the end it all depends on the level of detail the organization wish to retrieve. One way to shorten the survey is to use statistical analysis on existing data, collected with the survey, in order to determine which questions can be eliminated without losing too much exploratory power.

The Administration of the Survey

The respondents intended for a survey should be identified and this can best be done through a notification online. The easiest way to obtain this information is if the researcher has permission to individually identify people, but that is not always the given fact.

The presentation of the results should be as simple as possible. Experience has shown that whenever an advanced analysis is presented, they will not be easily understood by the public. Even types of box plots and so forth have shown to be too advanced as they are usually not used in business. Normal bar charts, and/or those 100% bar charts to show relationships is usually the best way to present results for stakeholders. A type of plus/minus charts with 0 as the middle value showing plusses and minuses on either side might also be a good way to present results. One thing is certain, it needs to be simple and it needs to be graphic.

To perform an analysis for either benchmarking or comparison of pre- and post reconstruction situation, there will be difficulties in both cases regarding the establishment of a defined point of reference. When benchmarking units against each other, if the organization is benchmarking square meters or so, they are never calculated the same way. What is the standard to be used? If employees are moved from an office to an open space what do they refer from? If you are going to be very particular, finding the point of reference is nearly impossible which means that it is crucial to identify the error level. In this case it is possible to determine if there is enough approximation to find out if the retrieved information makes any sense or not. To give an example; if the measured difference is in the 2% range, and the defined error range is also 2%, there is actually no difference anymore because it is not possible to tell if it is an error or an actual difference. These are things one should consider.

4.2.3 Head of Workplace Management (WM) at Telenor Real Estate

This interview was conducted with the Head of Workplace Management at Telenor Real Estate who has applied different editions of the Survey on Office Environment Quality to several of Telenor Real Estates pilot projects. The details regarding this interview can be found in Appendix 9.

Purpose of the Evaluation

The survey was intended as a tool in the current pilot projects that Telenor Real Estate is working on, and not specifically as a benchmarking tool. It has been part of a larger process of change where the goal was to change the way the organization thinks about workplaces and to test new solutions. It is important to know if the changes will work for the better before they are

performed and therefore an evaluation needs to be done pre- and post reconstruction. The effects need to be visualized for the decision makers in order to show the purpose, benefits and need for a change.

Workplace Management had already identified a few challenges in relations to office environment, and with this tool it was possible to check if there had been any improvements in these areas after the reconstruction. The results indicated improvements and were presented to the decision makers. That way the results can serve as a strong argument to get approval for future changes which needs to be made. The pre reconstruction evaluation will point out where the focus needs to be in the planned reconstruction. For a project in Denmark Telenor Real Estate used the findings from other pilot projects performed in the Telenor Group as part of the briefing for their new project.

The purpose of the evaluation is to find out what the challenges is in the workplace today in order to improve them for the future. Telenor Real Estate has developed a model for workplaces that gives them flexibility. The Telenor Group is a large company and has this office development model that they want to use as much as possible. They want to provide a "package", but a "package" that needs to be adapted to the specific situation as the work activities and needs depend on what unit they work in. One of the goals for the improved workplace is to better support the work process.

We desire a better physical work environment where people have daylight, no reflection in their computer screens, and enough air and light. That is why these factors are part of this survey and many other surveys. Although the organization knows that they might not be able to perform a reconstruction of every workplace they implement a survey evaluation on, it is important to find out how these conditions are perceived. If it is revealed that there are projects with major indoor environmental issues, they can in some cases decide to have a look at it. At least it is possible to use the results to show the users how other units were valued on the same conditions so they know how their work environment was assessed compared to the others. That way the evaluation serves both a local- , but also a benchmarking purpose.

The information obtained by this evaluation can be used local and central, to build up a database for benchmarking different projects. It is important for Telenor Real Estate to get feedback from the users if the changes have improved the workplace or not. They are constantly discussion what questions the survey should include as some of them can have a central meaning, but not on a local level and the other way around. The information will be used in two ways as it depends on the specific project. It is desirable to use the information for benchmarking between projects and to compare pre- and post reconstruction conditions in each project. When suggesting for departments, units or buildings within the Telenor organization to reconstruct their workplace to fit the "Telenor Model", it is important to possess data that can prove there will be improvements in the workplace with such a project.

The Administration of the Survey

The goal is that the process of the survey should become more automated. It is important to identify a group of people as respondents, get hold of the e-mailing list and to produce a standardized introduction that can be slightly altered and adapted to each project. The e-mailing

list can be used in two different ways; one where a common Internet link is sent out to everyone on the list, and one where individual links are sent out to each respondent. The desired administration methods are shown in table 4-2.

Administration Method 1	Administration Method 2
The disadvantage with the first method is that respondents can access the link more than one time and it is not possible to trace which respondents have replied and which have not. Therefore it is not possible to send out reminder e-mails to only the ones that did not answer. The advantage is that the e-mailing list can send out the email fast without the researcher having to type in every single email address.	The disadvantage with the second method is that the respondents might feel that they are less anonymous when they are identified with a link. The researchers also have to type in each e-mail address. The advantage is that the survey can be sent out to each respondent individually, and the researcher can identify who needs to be reminded by e-mail. This way the researcher has better control over the response rate.

Table 4-2 Survey administration methods

The whole process of the analysis needs to be automated. A standardized package with questions needs to be developed, with the opportunity to alter it slightly from project to project. Responses should be retained in a database for future benchmarks. The desired types of survey analysis is presented in table 4-3.

Analysis type 1	Analysis type 2
In some cases it is only desirable to benchmark the results, and in those cases it should be possible to ask for only this report from the database. All the tests will then be measured against each other.	In other cases it is desirable to perform a before and after comparison. An example will be a project where a pre- and post reconstruction evaluation is done. In this case it should be possible to retrieve a report that compares the pre- and post situation in addition to the benchmark.

Table 4-3 Types of Survey analyses

The response rate should be good over 50%, and Telenor Real Estate has experienced cases where the pilot projects only reached a response rate of 22%. They blame the low response rate on the fact that the survey was not open for a long enough time, leaving the respondent's only a few days to reply. With a fairly standardized survey, with automated functions, the process of sending out the survey would be shorter and providing more time for the researchers to collect data.

The Survey Design

Telenor Real Estate chose to base their workplace evaluation pilots on an already developed survey. Work Performance is evaluated in many different evaluation methods that try to explain productivity or performance. Usually they ask question like; do you think the office contributes to more or less productivity in your work? This might be considered as a bad way to collect data, because the questions are not very specific.

In the Survey on Office Environment Quality they have tried to come up with factors that support and build up around performance; hidden in effectiveness, communication and knowledge sharing. This is a good method to illustrate learning with several smaller and underlying factors. They have used theories and found the factors that together complete for example; work engagement. Telenor chose this survey because they thought it was more suitable for their purpose, and it does have more of an organizational focus and not only an individual focus. In retrospect this survey was considered to be too comprehensive. Although this might be highly suitable for scientific research, what Telenor needs is a tool for development, and that is why they chose to customize this survey to better fit their purpose.

The comprehensive survey has earlier been performed in pilots at Telenor, and it is therefore reasonable to assume that the extensive data collected from these evaluations can serve as a base for future evaluations within the same organization. Therefore the survey can be downsized to focus on office environment with supplements from office atmosphere and work effectiveness, for future projects. These are the factors that are considered most relevant for benchmarking, and to obtain data from. Work engagement, individual work performance, communication and knowledge sharing was eliminated because the purpose of this evaluation was to develop the office design.

The most important piece of information the survey should retrieve was how well the office environment functions. The users of the workplace should be able to perform their tasks. The survey should not take longer to complete than 5-10 minutes.

Previous Experience from Pilots at Telenor

Feedback from the respondents shows that the survey was too long in the previous pilots. Their opinion was that the survey contained some sensitive and personal questions that did not fit the presented purpose of the evaluation. The respondents were worried about what this information would be used for. The organization therefore wishes to eliminate the sensitive and private questions because they want to solely focus on the office functions and the built environment. Telenor Real Estate believes that the reason for making the survey long with numerous questions, is because research shows that it is important to not ask direct questions, as they will not lead to correct answers. It might be hard for respondents to evaluate and answer honestly if asked directly. Several indirect questions instead of a direct one will therefore lead to better data.

Another issue that has emerged is the occasional difficulties with internal terminology. Terms like "The Telenor Way" and "Way of Work" were not understood in Denmark and this might also be the case elsewhere. As the Survey is performed in English the organization is bound to encounter some language barriers in non-English-speaking countries. It is possible that some nuances of the questions might be lost if the respondents have limited English skills. Although there are several languages represented in the Telenor Group, the most practical solution is to stick to English as this is the official language of the organization.

4.3 Adjustment and Adaption Process

Telenor Real Estate has developed a Telenor Workplace Model, which will be presented in chapter 5, and they want this to be applied to every Telenor Building on a long term basis. In order to do so it is important for Telenor Real Estate to collect data that can be used to visualize the effects of such an application to the decision makers for every building. To collect this data they need a standardized method with tools easily operated and analyzed. As the Head of Workplace Management mentioned in the interview, it is important that everything is automated so that it is simple to send out, collect and analyze the evaluation results.

The researcher met with the Head of Workplace Management on February 3rd 2012 in order to discuss a suitable adaption of the survey for Telenor. In order to collect the data Telenor considered as most important for their purpose, the longer Survey on Office Environment Quality was narrowed down to only include the more functional aspects, related to use of space. These factors were defined as the most important areas the company needed to collect information on, and were therefore the reason for this limitation.

The questions and sections have been selected and eliminated based on what purpose they were meant for according to table 4-1 in chapter 4.2.1. Telenor wanted a shorter survey, focusing more on functional space and quality in order to quickly analyze the workplace quality for use in benchmarks or pre-, and post reconstruction comparisons. It was therefore crucial to eliminate all questions considered sensitive and less important for the workplace function purpose. The questions where respondents state how much time they spend in different areas doing work related activities was eliminated. Experience from earlier surveys show that the employees are not able to make the right estimates on how much time they spend working at different locations.

Section in the survey containing sensitive questions regarding social climate, health symptoms, and self assessed work performance was eliminated due to their sensitivity issue and less importance character in this case. The Head of Workplace Management states that they are not allowed by the company to ask some of the sensitive questions about employee's health and social skills. This might create a strong negative reaction among employees and refusal to participate. Although these are excellent questions developed to retrieve a deep insight into the underlying issues in the workplace, they had to be eliminated in order to make the survey shorter and more precise towards the defined purpose of this case.

A statement was made by Duffy (2008 cited in Grech & Walter, 2008) that can support the choices made in this adaption of the survey: "It is not possible to measure everything about the relationship between the workplace and business performance simultaneously on every front". It is essential that one prioritizes a relatively small number of highly important and achievable objects that might serve as a basis on which practical targets can be derived and performance measured.

4.4 Main Result: Evaluation of Workplace Quality

A Method for Improvement and Further Development of Workplace Design for the Future

The main result in this research is the newly developed Survey on Workplace Quality which is an adaption of the Survey on Office Environment Quality to provide the desired results from Telenor Real Estate.

The final Survey on Workplace Quality contains of nine sections with a total of forty-five scales, two open questions and some background information. Table 4-4 presents the different sections kept for the Survey on Workplace Quality, what they include and what information they are meant to provide (purpose). A full print of the developed survey, which was tested in this research, can be found in appendix 1 where it is displayed as it was presented in the online survey software.

Section	Contents of this section	Purpose of this section
Work Effectiveness	Questions about efficiency, workplace and work process	To determine if the workplace supports different aspects of the work process
Office Environment	Questions about all the assessments of the different aspects of the environment	To analyze to what degree the employees are satisfied with different aspects of the office environment (e.g. facilities, functional spaces etc.)
Office Atmosphere	Colors and character of the workplace Esthetic satisfaction in the workplace	To determine if the respondents are satisfied and proud of the esthetic appearance of the workplace
Job Characteristics, Communication & Knowledge Sharing	Questions about cooperation, and information and knowledge sharing in work area	To determine to which degree the respondents cooperate and share knowledge in the workplace
Privacy & Distractions	Questions about distractions, interruptions and privacy	To determine to which degree the respondents are interrupted or distracted while working and how this affects their work process To determine if the workplace provide space for private discussions
Workspace Assessments & Satisfaction	Questions about work area and work settings Appropriateness of work station	To evaluate the respondents perception of their work station/work area
Spatial diversity	Questions about work spaces (including outside the building), and how they perform	To determine in what spaces the respondents prefer to work, and if these spaces support their work
Summarizing Questions	Satisfaction on interior, total workplace environment & total facilities	To determine if the overall satisfaction is coherent with the ratings provided in previous questions
Open Questions	Satisfaction and dissatisfaction in the work zone Additional comments on work zone	To collect any additional information the respondents are willing to share
Background Information	Gender, age, job tenure, degree of employment &supervisory responsibilities	To collect the respondents demographic information

Table 4-4 Contents of Survey on Workplace Quality

The full Survey on Workplace Quality is presented below. The online layout of the survey as seen in the online survey tool Enalyzer (ESS) can be found in appendix 1.

Survey on Workplace Quality

Work Effectiveness

The following questions concern how the office supports your work.

Please indicate to which degree you agree with the following statements

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Our office supports effective work.	☐	☐	☐	☐	☐	☐	☐
Our office makes efficient use of the available space.	☐	☐	☐	☐	☐	☐	☐
Our office support project work.	☐	☐	☐	☐	☐	☐	☐
My workspace supports informal cooperation.	☐	☐	☐	☐	☐	☐	☐
Our office promotes Telenor's Ways of Work (WoW).	☐	☐	☐	☐	☐	☐	☐

Office Environment part. 1

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following properties of your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Aesthetic appearance of the work zone you belong to.	☐	☐	☐	☐	☐	☐	☐	☐
Possibilities for privacy for conversations within the work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Amount of noise from other people's conversations while you are at a workdesk in the open plan work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Size of workdesk to accommodate your work.	☐	☐	☐	☐	☐	☐	☐	☐
The possibility to make phone calls (without disturbing others/or being disturbed by others).	☐	☐	☐	☐	☐	☐	☐	☐

Office Environment part. 2

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following properties of your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Amount of background noise (i.e. not speech) you hear at a workdesk in the open plan work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Distance between you and other people you work with.	☐	☐	☐	☐	☐	☐	☐	☐
Frequency of distractions from other people.	☐	☐	☐	☐	☐	☐	☐	☐
Ease of access to supplementary work spaces (meeting rooms, multirooms e.g.).	☐	☐	☐	☐	☐	☐	☐	☐
Access to space where you can concentrate.	☐	☐	☐	☐	☐	☐	☐	☐
Access to/visibility of management.	☐	☐	☐	☐	☐	☐	☐	☐

Office Environment part 3.

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following functions in your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Conference and meeting facilities.	☐	☐	☐	☐	☐	☐	☐	☐
Break zones and social space within the work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Workplace in open plan work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Individual storage spaces.	☐	☐	☐	☐	☐	☐	☐	☐
Common storage and filing within the work zone.	☐	☐	☐	☐	☐	☐	☐	☐
Printer/copier room ('Service room')	☐	☐	☐	☐	☐	☐	☐	☐

Office Atmosphere part. 1

The following questions concern how you experience the atmosphere in the office.

In Telenor offices, I'm pleased with the following features of office design:

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Choice of colours	☐	☐	☐	☐	☐	☐	☐
Atmosphere, ambience (character of the workplace)	☐	☐	☐	☐	☐	☐	☐

Office Atmosphere part. 2

The following questions concern how you experience the atmosphere in the office.

How well does the office building where you are based perform in providing the following qualities?

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Makes you feel proud of where you work.	☐	☐	☐	☐	☐	☐	☐
Provides a workplace you would be happy to bring visitors to.	☐	☐	☐	☐	☐	☐	☐
Provides a stimulating and creative environment.	☐	☐	☐	☐	☐	☐	☐

Job Characteristics, Communication and Knowledge Sharing

Please indicate to which degree you agree with the following statements.

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
My work requires close co-operation with other people in the organization.	☐	☐	☐	☐	☐	☐	☐
Overall, I'm satisfied with communication and sharing of information in my work area.	☐	☐	☐	☐	☐	☐	☐

Privacy & Distractions

Please indicate your opinion regarding the following statements.

	Very inaccurate 1	2	3	Neutral 4	5	6	Very accurate 7
While at my workstation, I can work with few distractions or interruptions.	☐	☐	☐	☐	☐	☐	☐
Interruptions at work often prevent me from giving my full attention to my job.	☐	☐	☐	☐	☐	☐	☐
I am able to have a personal or private discussion while at work.	☐	☐	☐	☐	☐	☐	☐

Workspace Assessment & Satisfaction

Please indicate to which degree you agree with the following statements.

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Overall, my work area is appropriate for my work.	☐	☐	☐	☐	☐	☐	☐
I like the style/quality of my furniture.	☐	☐	☐	☐	☐	☐	☐
I am satisfied with my work setting as a whole.	☐	☐	☐	☐	☐	☐	☐
Overall, I feel comfortable in my work area.	☐	☐	☐	☐	☐	☐	☐

Spatial Diversity

The following questions concern your perception of the different places where you are able to perform your work.

Please indicate to which degree you agree with the following statements.

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
I can decide for myself where to perform my work (Work zone, office building, home, on travel, with customers?)	☐	☐	☐	☐	☐	☐	☐
I can work at different locations at this office building	☐	☐	☐	☐	☐	☐	☐
In this office building there are spaces that I can use for distraction-free work	☐	☐	☐	☐	☐	☐	☐

In this office building there are spaces where I can relax and recover	☐	☐	☐	☐	☐	☐	☐
The various work enviroment, that are available to me, assist me in carrying out my work	☐	☐	☐	☐	☐	☐	☐
My work area offer enough space for the number of employees who work there	☐	☐	☐	☐	☐	☐	☐

Summarizing Questions

The following questions concern your overall satisfaction with your work place.

Please indicate to which degree you are satisfied with the following statements.

	Very unsatisfied 1	2	3	Neutral 4	5	6	Very satisfied 7	Irrelevant
...the interior of the office building?	☐	☐	☐	☐	☐	☐	☐	☐
...the total area of your workplace environment?	☐	☐	☐	☐	☐	☐	☐	☐
...the total facilities (e.g. building, interior and services) you work in?	☐	☐	☐	☐	☐	☐	☐	☐

What are you most satisfied with in your work zone? And what are the main challenges? Please use the text field below.

Background

Gender

☐ Male

☐ Female

Your age

☐ Up to 29

☐ 30-39

☐ 40-49

☐ 50 and above

Job tenure (time in years)

☐ _ _ _ _ _ _

Degree of employment

☐ Part time

☐ Full time

Do you have supervisory responsibilities?

☐ Yes

☐ No

How many persons do you supervise directly?

☐ _ _ _ _ _ _

Do you have any additional comments regarding your work zone?
Please use the text field below.
We appreciate all comments!

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

4.5 Usability Walkthrough

As a supporting tool to The Survey on Workplace Quality, a Usability Walkthrough has been added to the method in order to collect qualitative data to support the quantitative data collected through the survey. The Usability Walkthrough is a part of the USE-Tool mentioned in chapter 3 and is considered a necessary addition to the pilot study performed in this thesis. Usability Walkthrough Guide used in this thesis can be found in appendix 2

4.6 Case Summary

The method developed in the case chapter of this thesis is the "Evaluation of Workplace Quality" which consists of the tools Survey on Workplace Quality and Usability Walkthrough (figure 4-2). In order to evaluate the usability of the method, it was tested in a pilot study at Telenor Budapest in April 2012. This pilot study will be presented in chapter 5.

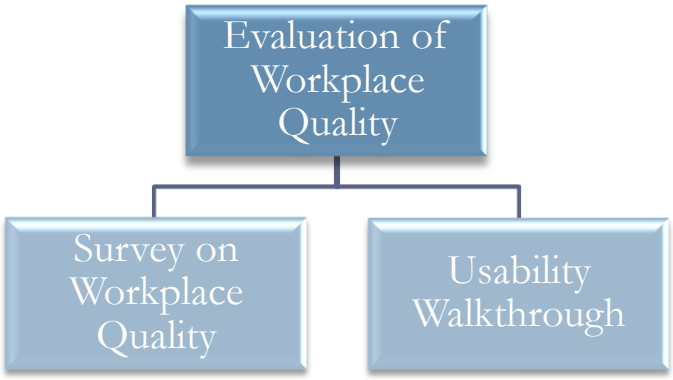
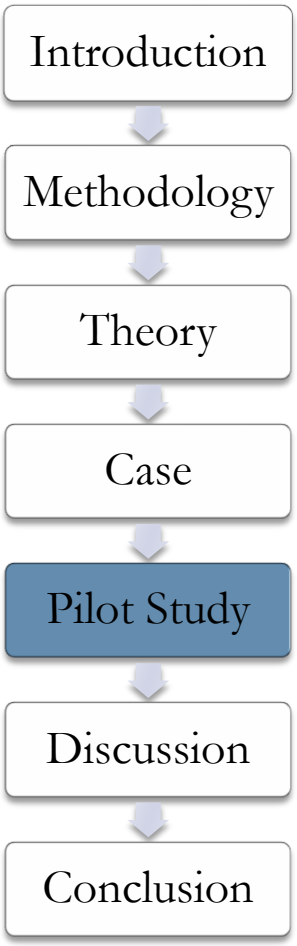


Figure 4-2 Method: Evaluation of Workplace Quality

5

Pilot Study

Telenor Budapest



5.1 The Telenor Group

Telenor Group is a communications, IT and media company with Head Quarters in Norway. They are one of the world's largest mobile operators with 195 million mobile subscribers and operate in 11 markets. In addition they have a stake of 39.6 percent in VimpelCom Ltd., which operates in additionally 10 markets (Telenor Group, 2011a). With their 33 200 employees worldwide, Telenor Group have their main operations concentrated in three geographic regions; The Nordic Countries, Central and Eastern Europe and Asia. As a result of their multiple international locations they are able to offer a wide range of telecom-related services and enterprises (Telenor Group, 2011b). In order to deliver their ambitions, Telenor has defined three main focus areas for 2010-2012; to capture their growth in Telenor's three regions, to strengthen operational performance, leverage Group scale and competence, and lastly to ensure capital discipline (Telenor Group, 2011c).

5.2 The Telenor Workplace Model

Telenor developed their workplace model in connection to their move to Fornebu in 2001/2002, and is based on an open landscape office structure with functional rooms and space to create a dynamic and efficient workplace. The workplace model has later been fully or partially implemented in Telenor's flagship buildings and major admin buildings in Norway, and in most of Telenor's Business Units internationally (Blakstad, 2011).

The new Headquarters at Fornebu was designed to stimulate innovation and the rapid sharing of knowledge. The Executive President for the Telenor Fonebu project, Bjørn Sund, states that"the new building will give employees greater well-being and improve the possibilities for communication" (Myerson & Ross, 2006.). Telenor's ambition for the workplace model was that it shall ensure that Telenor is at the forefront of workplace organization both nationally and internationally. The model also creates a framework for the interaction between physical, social and technological factors (Blakstad, 2011). Project work environments are among the key innovations and these areas provides space where people from different units can work together for a period of time (Myerson & Ross, 2006)

The Telenor Workplace Model is designed to bring out added value for the company by (Blakstad, 2011) Figure 5-1 is a visualization of this workplace model:

- Supporting work processes and the use of new technology
- Contributing to a better working environment
- Improving space efficiency
- Contributing to increased standardization

Figure 5-1 Telenor Workplace Model (Blakstad, 2011. P.18)

The workplace model is based on several principles:

1. Activity-based workplaces
2. Workplace Flexibility
3. Clean Desk
4. Dynamic Factor

Telenor developed their workplace model to provide flexibility and maintain a design that should support each employee's work processes. A flexible use of space with "fee seating" makes it possible to adapt areas to particular activities, such as quiet zones, without needing to expand (Blakstad, 2011).

Figure 5-2 shows the different User Scenarios and work settings throughout the working day identified at Telenor

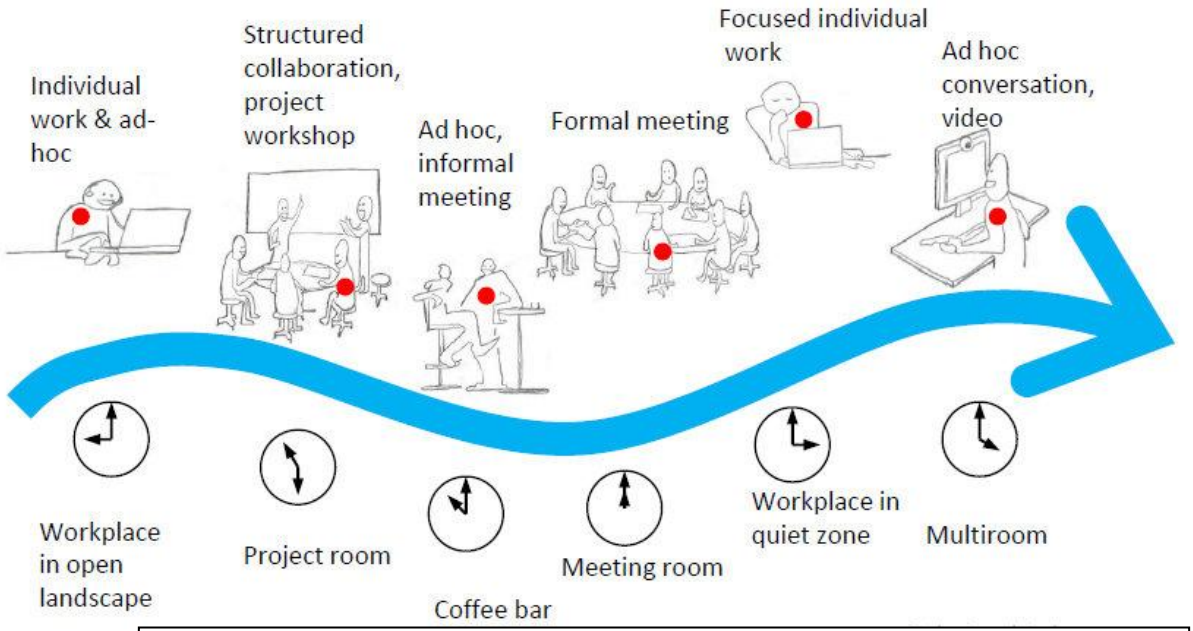


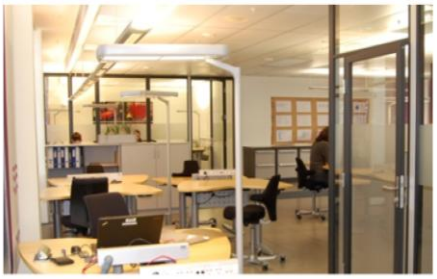
Figure 5-2: User Scenarios and work settings throughout the working day (Blakstad, 2011. P.15)

Ripples in Water

Telenor designs their work zones according to the "ripples in water" principle placing all noisy activities near the entrance to the work zone. This way the work zone would get quieter the further into the zone one gets. All walkways and access zones should also be located strategically in relations to the noise it creates in the work zone (Blakstad, 2011). Figure 5-3 depicts a typical work zone based on these principles.

Figure 5-3: Work zone designed according to the ripples in water principle (Blakstad, 2011.

A typical Telenor work zone designed according to the Telenor workplace Model includes several areas meant to support different functions and activities (Blakstad, 2011). Table 5-1 below presents the area functions of some of the different zones.

Area Functions in the Telenor Workplace Model (Photos taken at Telenor Fornebu)		
Individual Workplaces in Open Zone	The purpose of the individual workplaces is to support individual work that does not require concentration and quiet surroundings.	Workplaces at Telenor Fornebu
Individual Workplaces in Quiet Zone	The purpose of the quiet zone is to provide work stations for individual work that requires concentration. They may be situated in a quiet part of the work zone or physically separated from the other zones with walls. There should be no conversations or phone calls in this zone and people should not contact or distract others.	 Quiet Zone at Telenor Fornebu
Social Zone	The purpose of the social zone is to create a space for informal meetings for conversations, a cup of coffee and the opportunity to relax. This zone is placed in the active part of the work zone and can contain a partial kitchen with a coffee machine.	Social Zone at Telenor Fornebu
Internal Project Rooms	This type of project room is easily accessible inside the work zone and can only be booked by people belonging to that specific zone. The room contains necessary furniture for larger meetings and technology for communication and visual presentations.	Internal Project Rooms at Telenor Fornebu

Touchdown	The purpose of the "touchdown stations" is to provide a place where people can "plug in" for shorter periods of time. It is meant to be a station for people on the move between meetings and is placed in the active part of the work zone. The touchdown work station brings a dynamic effect to the work zone and provides flexibility. Groups working together can use this place when cooperation is needed.	Touchdown Area at Telenor Fornebu
Multi Rooms	Multi-rooms are screened and soundproof rooms for important phone calls, confidential conversations and smaller meetings/live meetings. The purpose of these rooms is to provide privacy when needed and there should be one multi room per 8 - 10 work places.	Multi Room at Telenor Fornebu
Meeting Rooms	Larger meeting rooms have to be booked outside the zone, but there are several close to each work zone. These are used for larger meetings, especially with external collaboration partners.	Meeting Room at Telenor Fornebu

Table 5-1 Area Functions of the Telnor Workplace Model (Blakstad, 2011)

5.3 Telenor Budapest

The company Pannon was established in Hungary in 1994 and changed brand to Telenor in May 2010. Telenor Hungary is the country's second largest mobile operator providing mobile and broadband services (Telenor, 2012).

General Floor Plan and Unit Floor Plan

The Telenor House in Hungary presents a flexible template, which shows the various modes the model might be adapted. The building is divided into four basic components; the units which are divided into wings of four units, three units and two units respectively. As a organizing spine for the entire building, the central atrium and circulation zone can be found in the centre of the building reaching from the bottom floor to the top one (Zoboki & Demeter). The floor plan and general structure of the Budapest building is shown in figure 5-4.

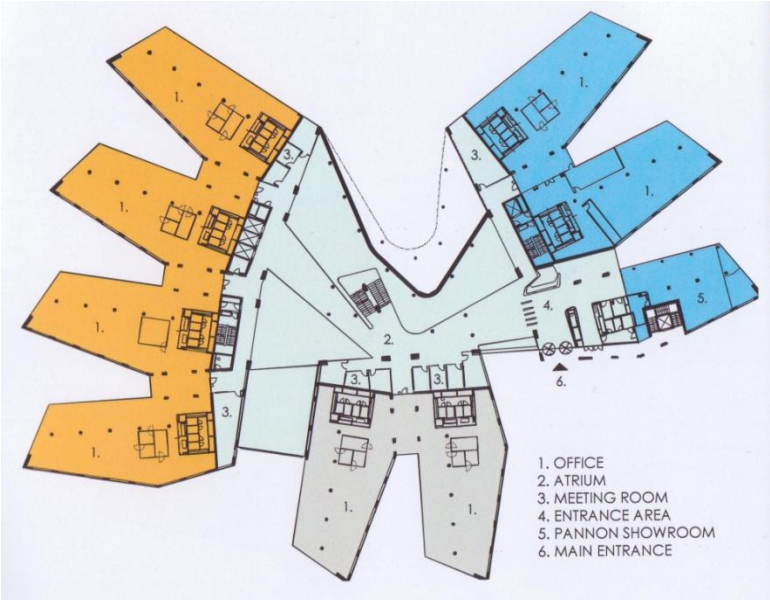


Figure 5-4: General Floor plan at Telenor Budapest (Zoboki & Demeter)

The units at Telenor Budapest demonstrate a flexible and divers model that can house a number of seating options ranging from 27 persons, 40 persons and 48 persons simply by manipulation of the massing of the building and rearranging the furniture (Zoboki & Demeter). An example of these variations can be seen in figure 5-5.

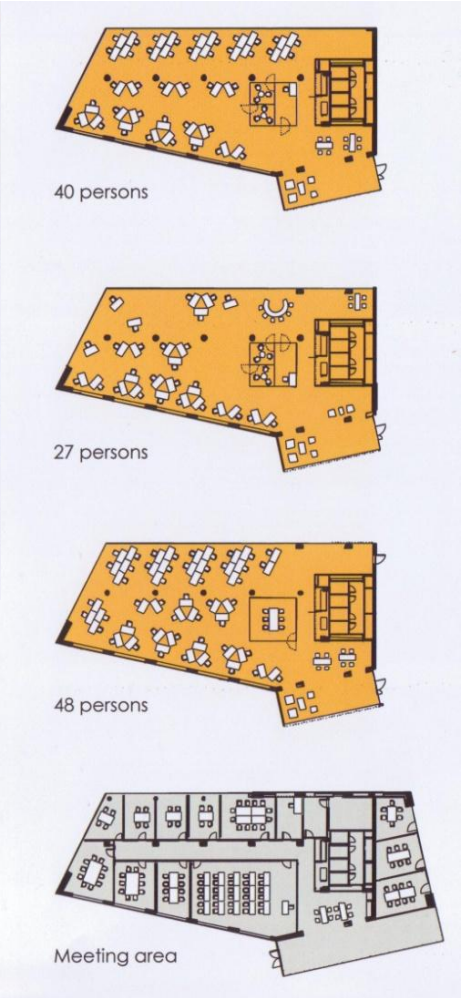


Figure 5-5: Unit Floor plans at Telenor Budapest with different seating options (Zoboki & Demeter)

5.4 Pilot Study: Telenor Budapest

The purpose of the pilot study in this thesis was to test and evaluate the usability of the developed Evaluation of Workplace Quality with its tools Survey on Workplace Quality and the Usability Walkthrough. The method was tested at Telenor's location

in Budapest, Hungary and a focus group with some of the respondents was conducted in order to evaluate the usability of the Survey on Workplace Quality.

The following section of this chapter provides the results from the pilot study. The first part is dedicated to the results from the survey sent out to employees at Telenor Budapest prior to the researchers visit to the premises. The second part is dedicated to the results from the Usability Walkthrough that was performed at the premises during the researcher's visit to Telenor Budapest. The third part is dedicated to the results from the focus group

5.4.1 Results from The Survey on Workplace Quality

The pilot group selected at Telenor Budapest consisted of 107 employees from different sections and departments. A total of 44 replies were collected through the online survey software, resulting in a 41% response rate. There were also 12 participants that partially completed the survey. The results from the survey are presented in this chapter, and visualize the assessments of the 44 respondents that completed the survey.

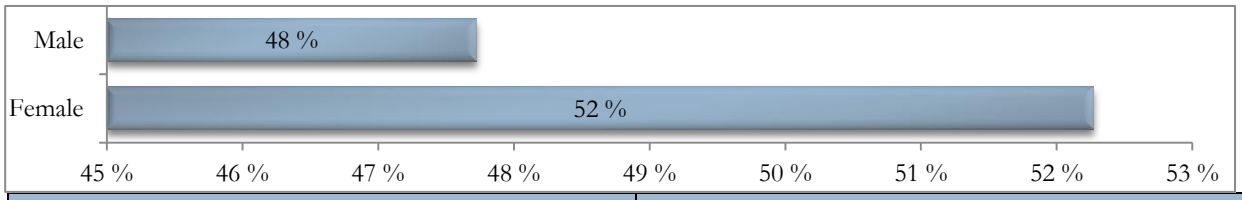
The entire dataset from the pilot study survey has been transformed into a portable document format (pdf) and can be found in Appendix 3.

The following is a presentation of the background information of the respondents that participated in the survey, and a presentation of response statistics on the open questions.

Summarizing Questions

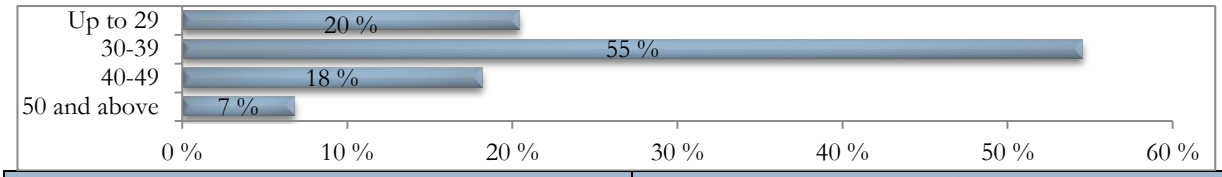
Open Question	Total Responses
What are you most satisfied with in your work zone? And what are the main challenges? Please use the text field below.	15

Gender



	Total	
Gender	**Percentage**	**Number**
Male	48 %	21
Female	52 %	23
Total	**100 %**	**44**

Age



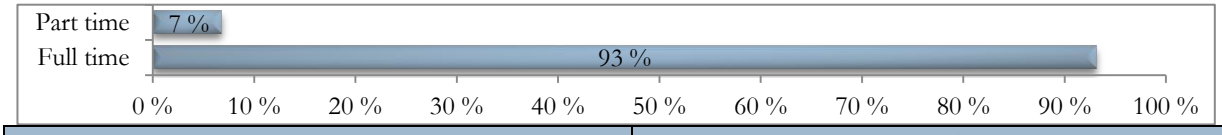
	Total	
Your age	**Percentage**	**Number**
Up to 29	20 %	9
30-39	55 %	24
40-49	18 %	8
50 and above	7 %	3
Total	**100 %**	**44**

Job Tenure

	Total Responses
Job tenure (time in years)	44

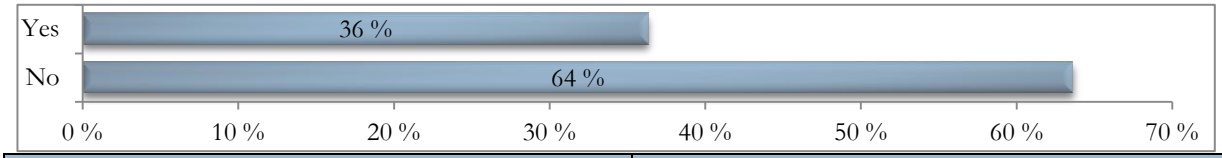
The time respondents have worked in the company range from 1 to 30 years.

Degree of Employment



	Total	
Degree of employment	**Percentage**	**Number of Participants**
Part time	7 %	3
Full time	93 %	41
Total	**100 %**	**44**

Do you have supervisory responsibilities?



	Total	
Do you have supervisory responsibilities?	**Percentage**	**Number of Participants**
Yes	36 %	16
No	64 %	28
Total	**100 %**	**44**

	Total Responses
How many persons do you supervise directly?	16

16 resopondents have supervisory responsibilities; they mostly supervise 1 to 8 persons, but one of them supervise 86 persons.

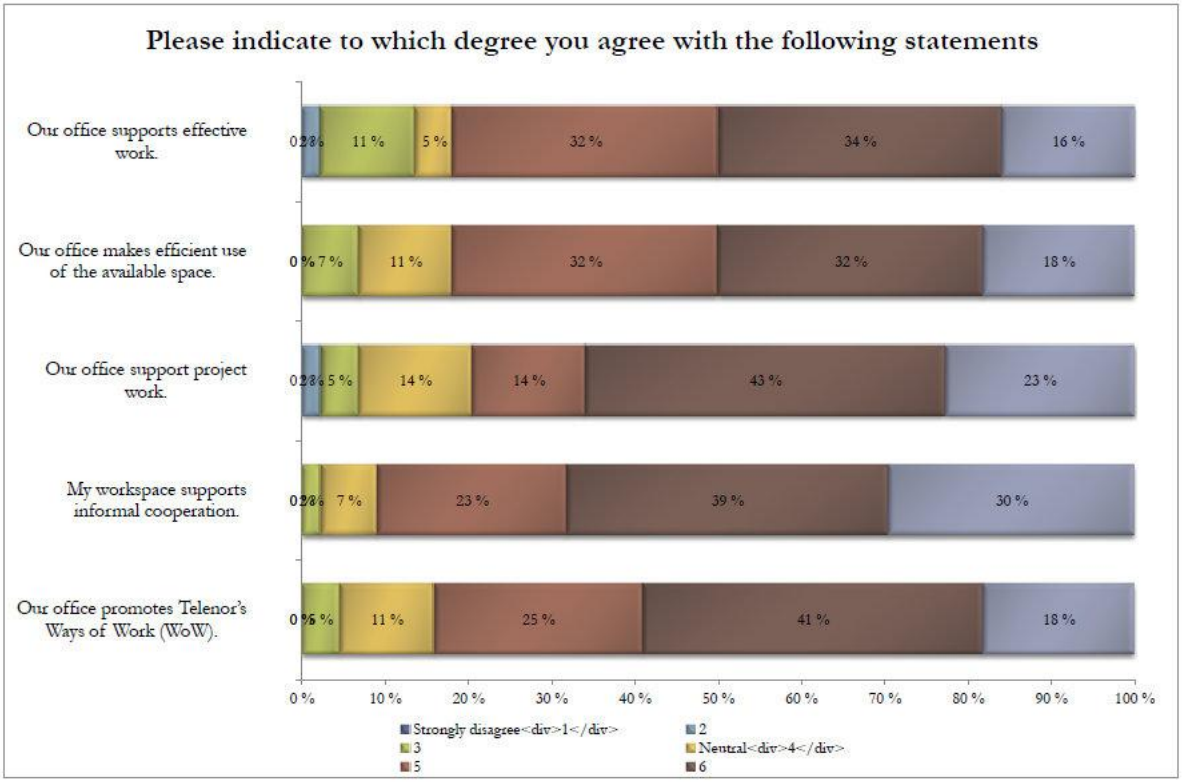
Open Question

	Total Responses
Do you have any additional comments regarding your work zone? Please use the text field below. We appreciate all comments!	11

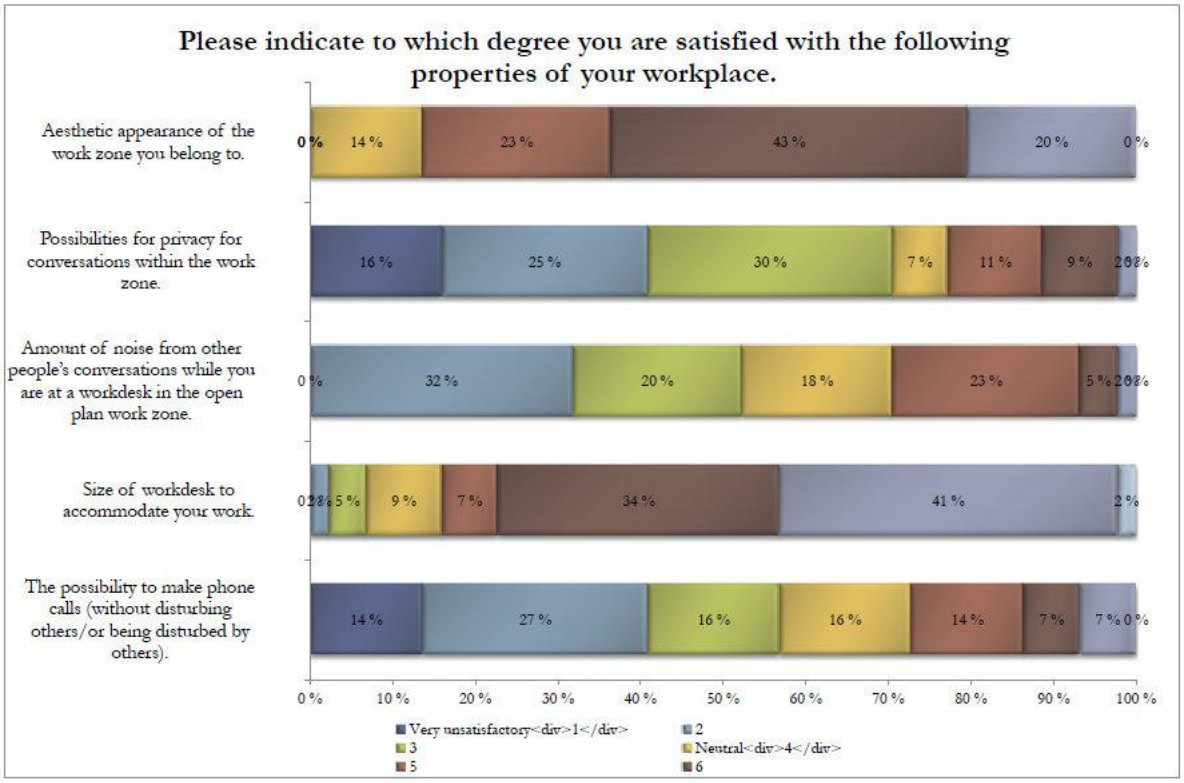
Reports from Survey

The following is a presentation of the scales retrieved in the survey. The scales are grouped by theme and follow in the chronological order of the survey.

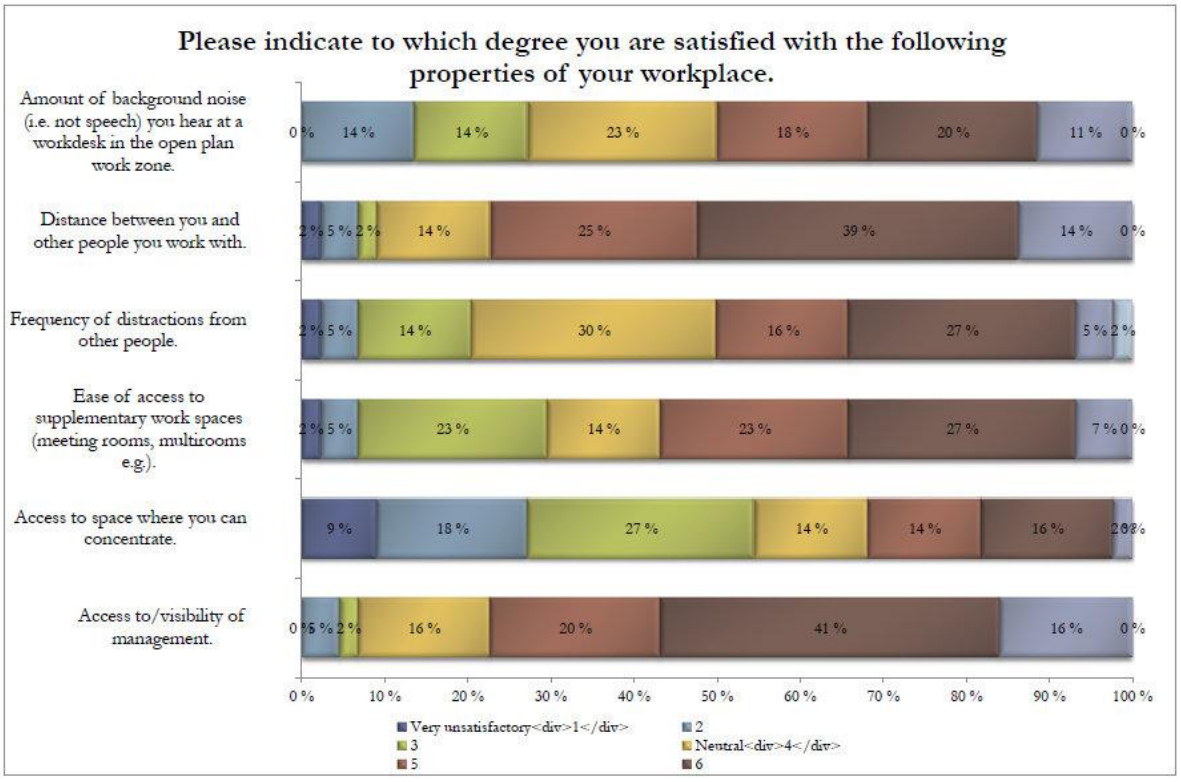
Work Effectiveness



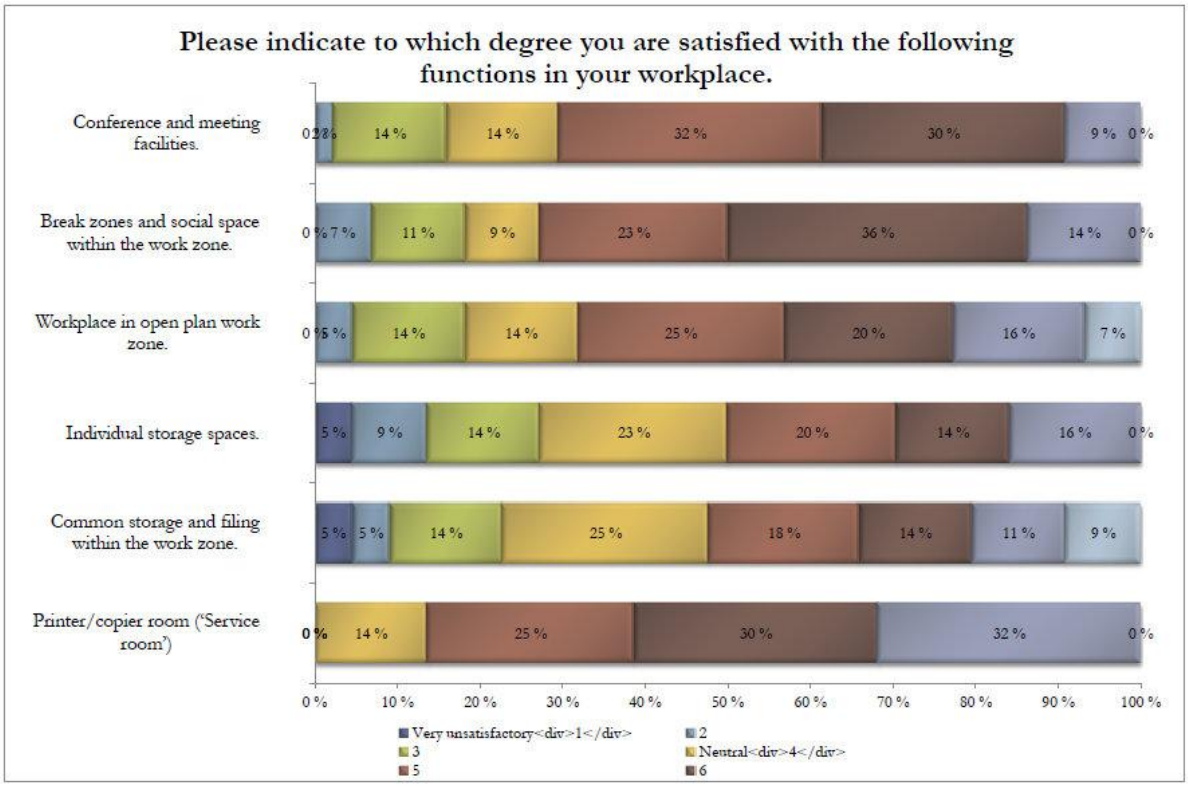
Office Environment part. 1



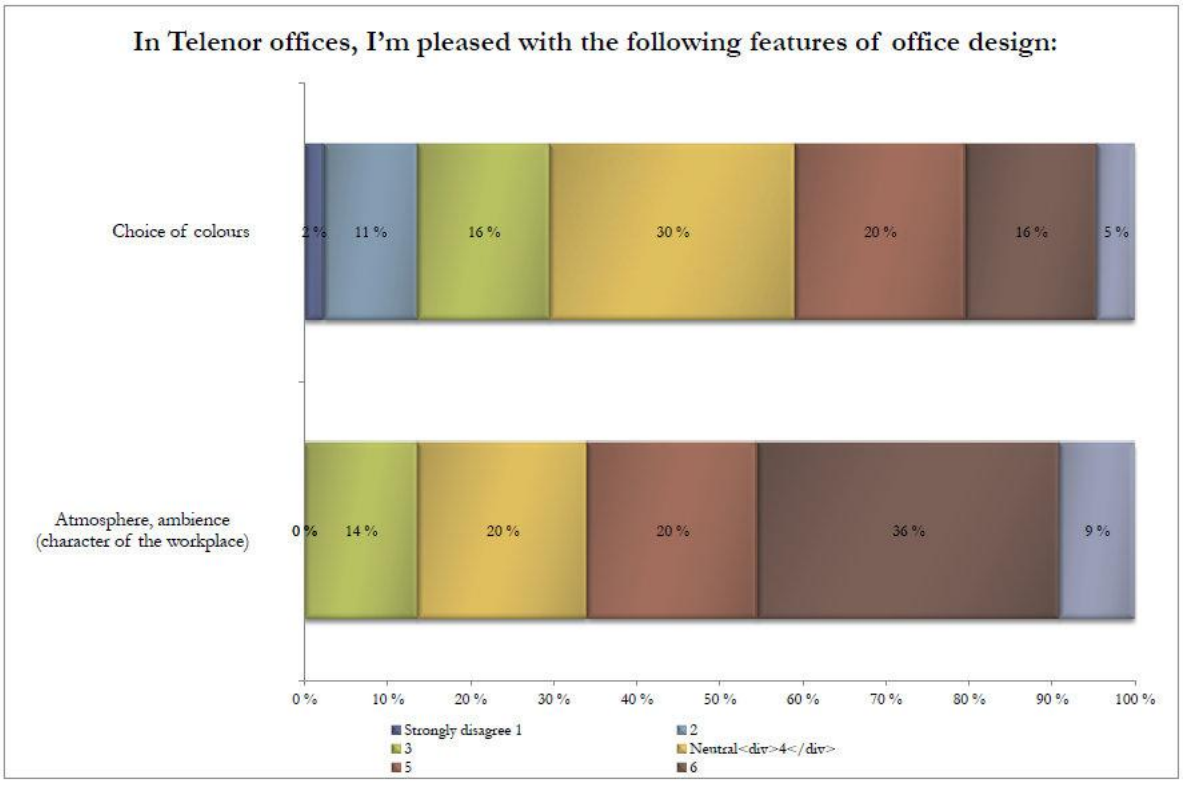
Office Environment part. 2



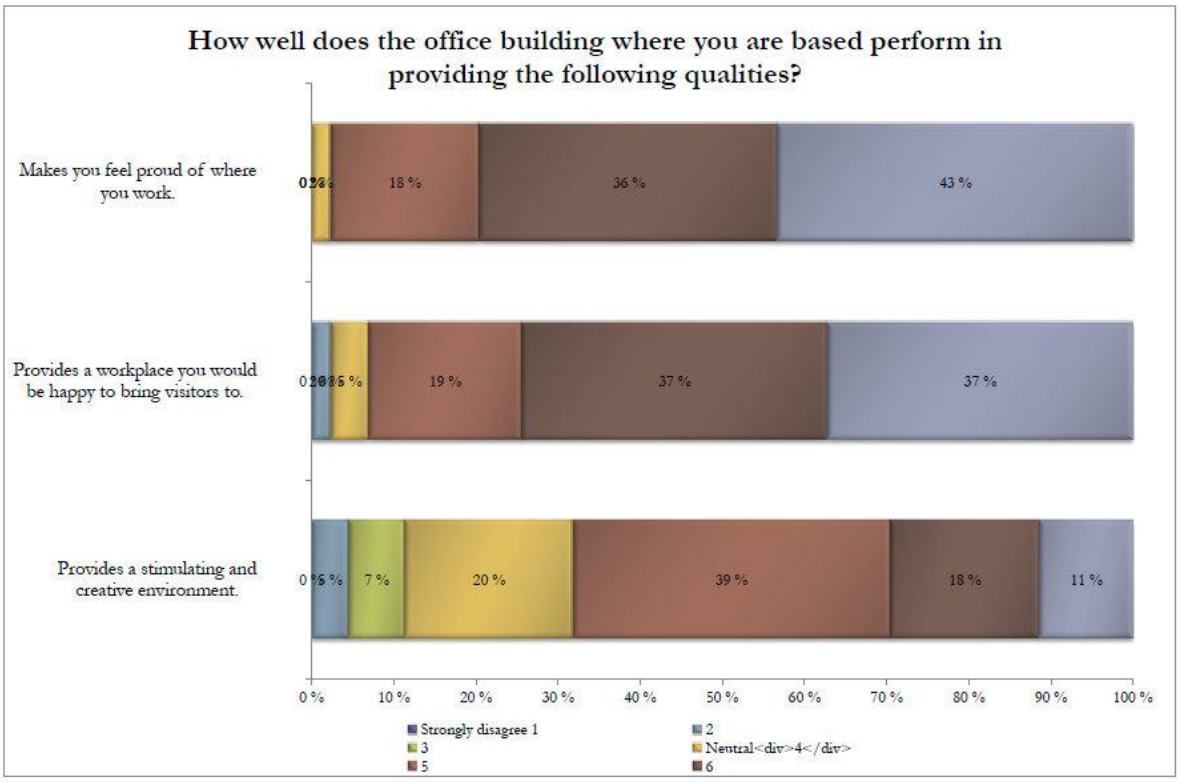
Office Environment part. 3



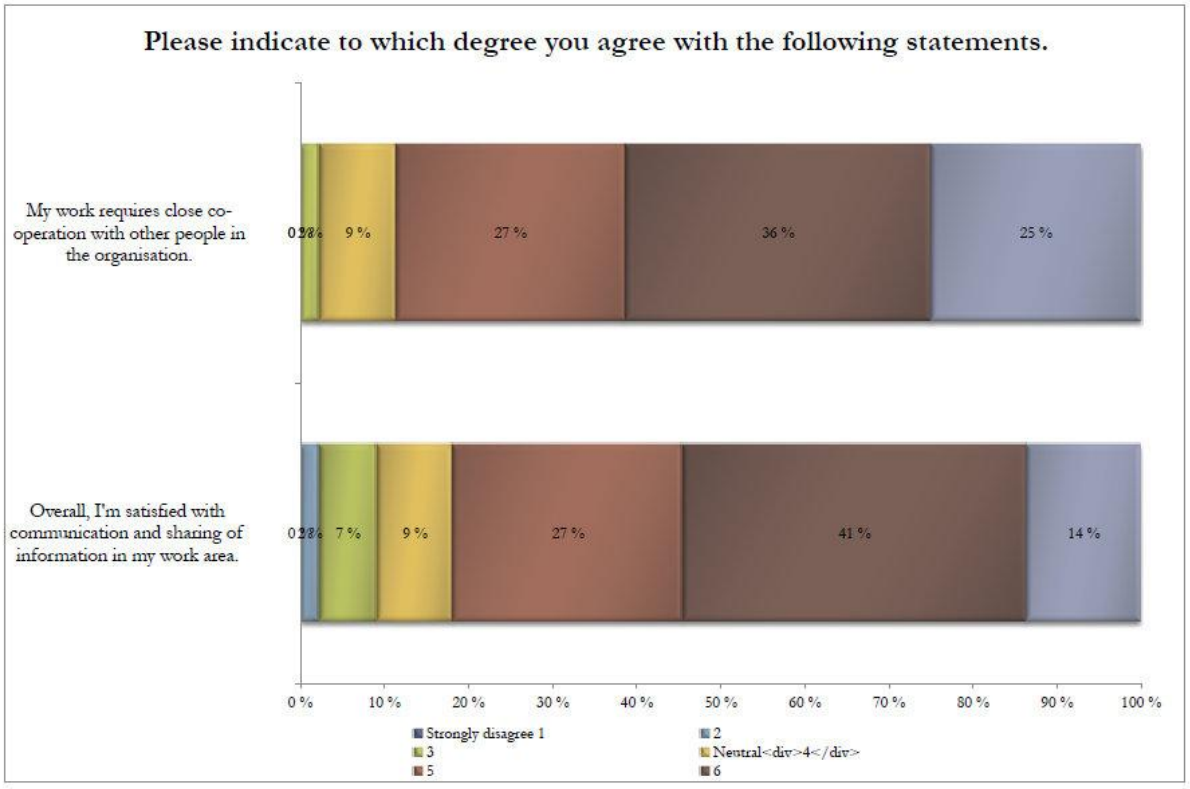
Office Atmosphere part. 1



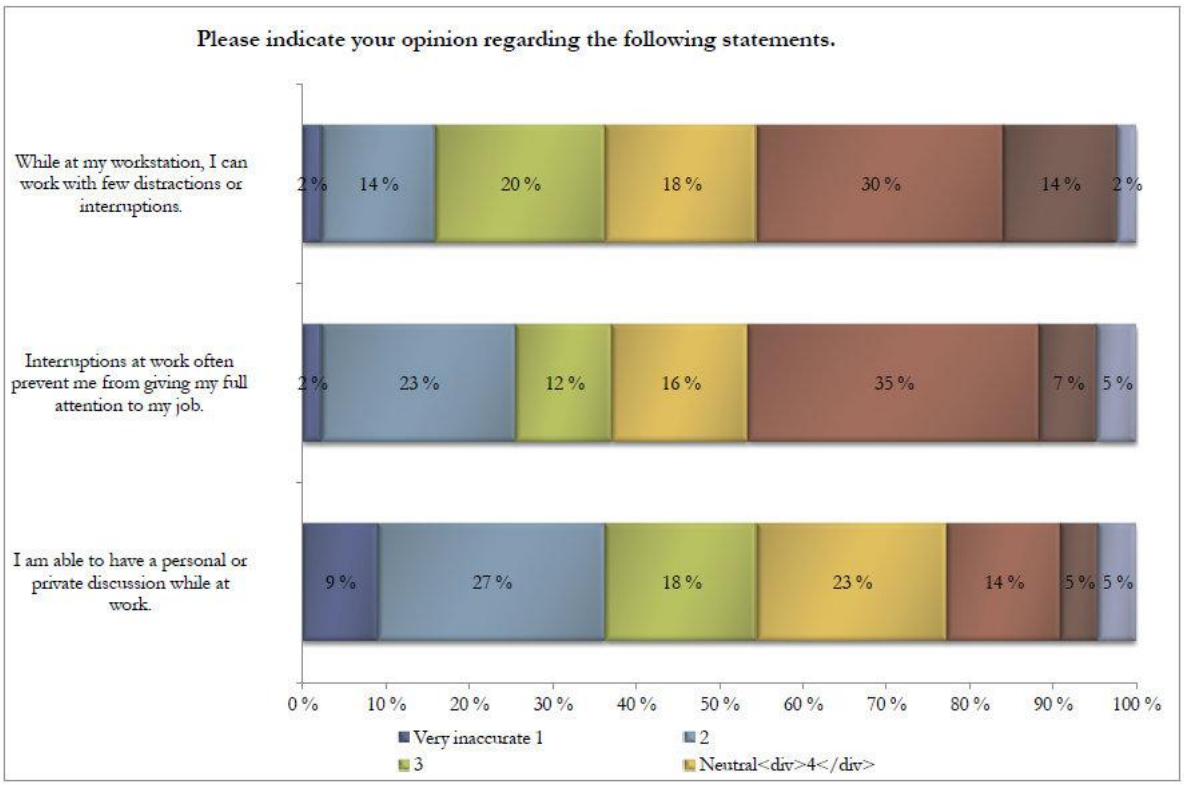
Office Atmosphere part.2



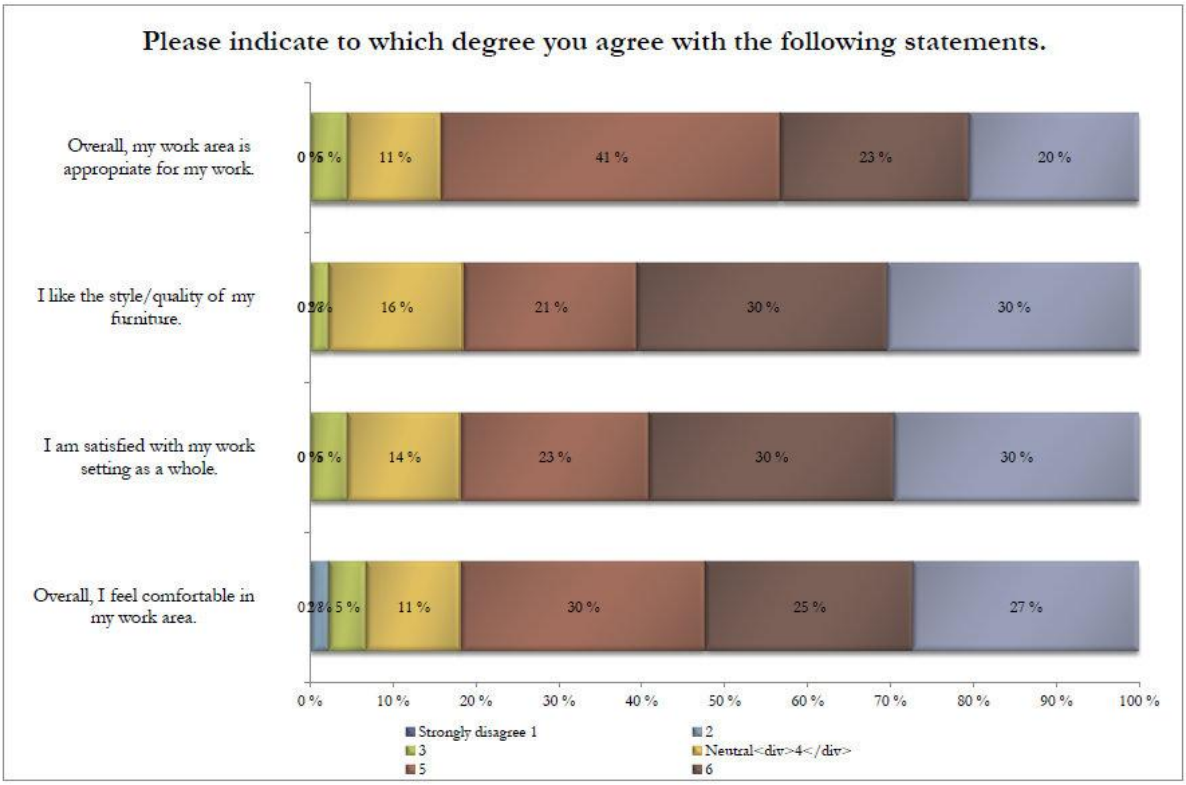
Job Characteristics, Communication and Knowledge Sharing



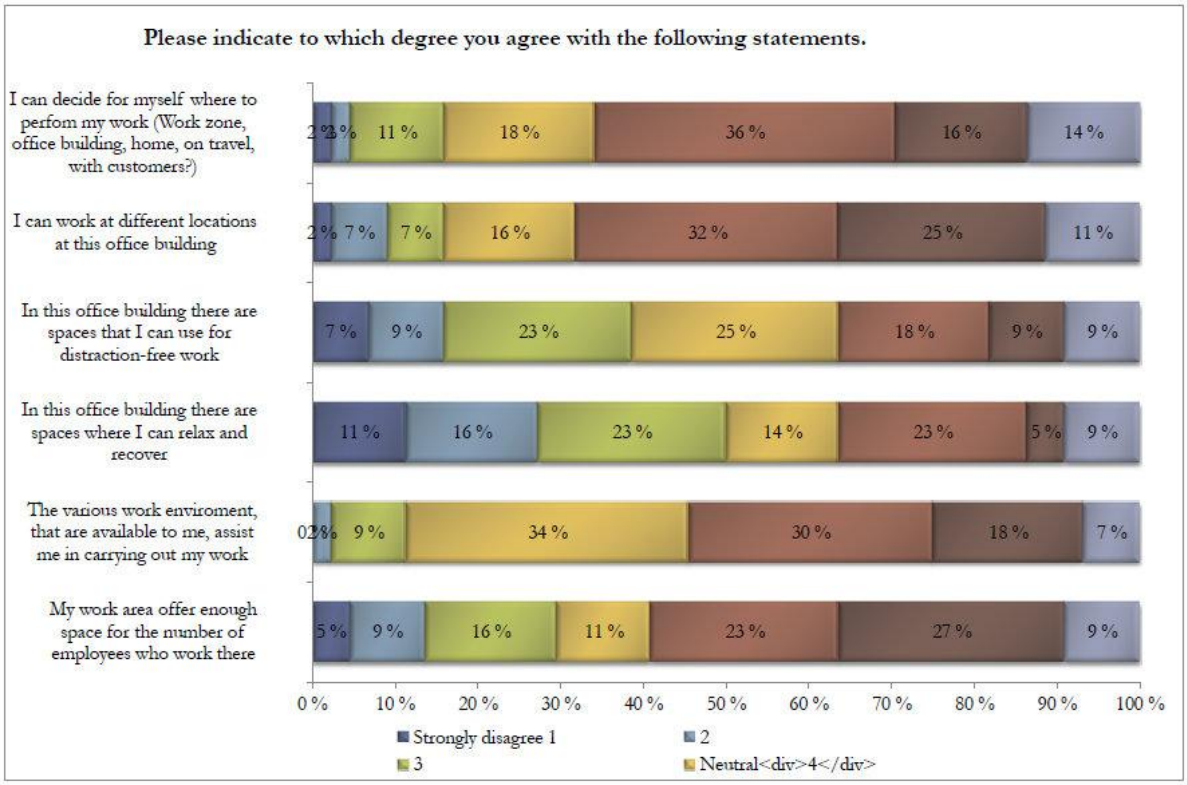
Privacy & Distractions



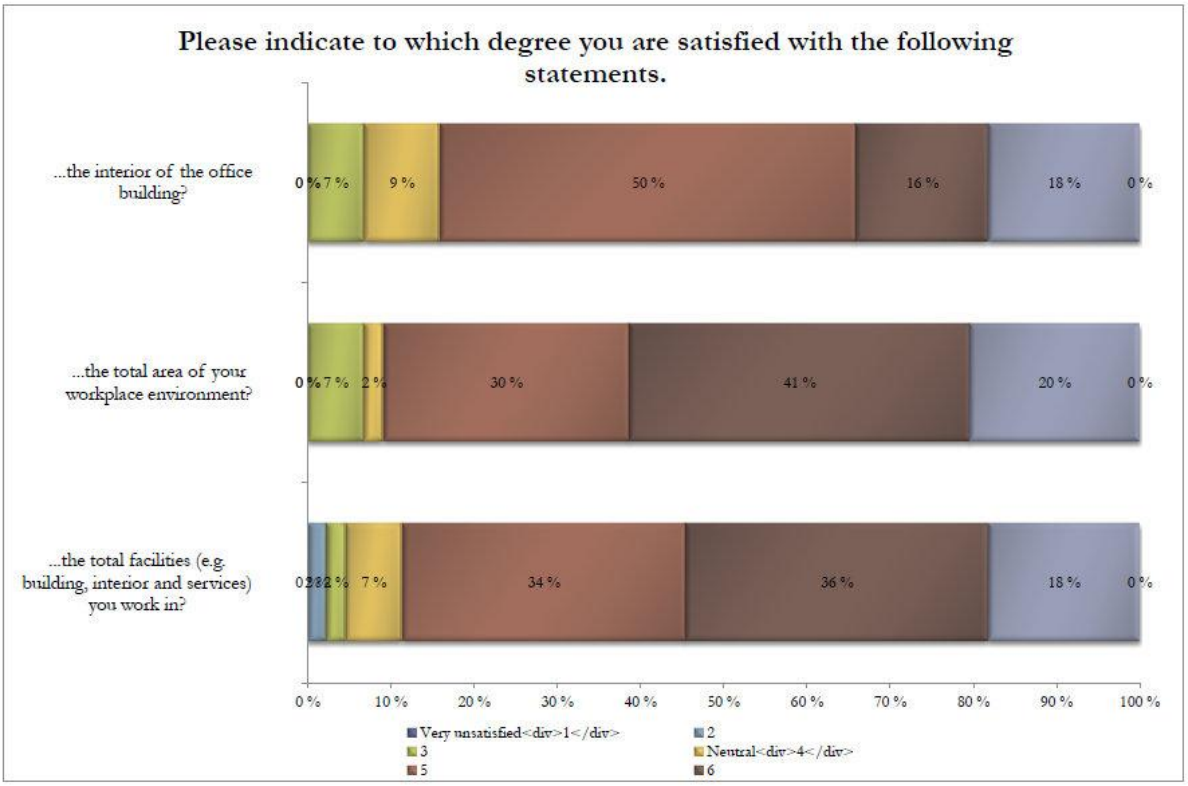
Workspace Assessment & Satisfaction



Spatial Diversity



Summarizing Questions



Open Questions:

What are you most satisfied with in your work zone? And what are the main challenges?

15 people responded to this question and many state that they are satisfied in general, they like the large open spaces, being close to nature. The respondents are most satisfied with the design of the building, the large and numerous windows, the view from the building, adjustable tables and chairs in the work zones, and the availability of colleagues with whom I need to work cross-functionally. The spaces for team work are considered to be inspiring and innovative, although they could be more colorful.

A respondent states that he or she is proud to work in an office building that represents Telenor's commitment towards environment and open culture, however there is a limitation that they have not customized the building for people with special needs. Further the respondent states that customer service needs more screens (wallboards) to e.g. display results. People in customer service state that their unit is overstaffed and hopes that this is temporary.

One respondent states that the open spaces in general are too big, and should be separated into smaller spaces.

The main challenges were identified as lack of silent rooms, lack of fresh air in units, too low temperatures and air quality, not enough privacy in the office and not enough parking spaces. All these challenges were mentioned by more than one respondent. A respondent mentions that informal discussions often are annoying for others and another mention that making confidential phone calls or conversations are a challenge.

Regarding the lack of parking spaces respondent comments that even though the premises are outside the city area and transportation is difficult for some, there is still a lack of parking spaces. Further the respondent argues that there is enough space for expansion but no ambition to do so. This is mostly a challenge for regular employees, but for management this is not the issue. The same respondent states that there are not enough meeting rooms and that people often have to find alternative solutions, like unit kitchens of coffee shop. Also the size of the cafeteria is not satisfactory for the amount of employees in building. Lastly it is mentioned that there is a lack of space where people can work on confidential materials and material of private character.

Do you have any additional comments regarding your work zone?

11 participants respond to this question several points out that they would like more fresh air in the building. Suggestions are made to add more color, contemporary arts, better room booking system and that something should be done with the fitness area as the rooms are available, but empty. Also another function mentioned several times is the lack of sound proof cubicles as they are meant to be silent rooms.

One respondent states that "Telenor workplace is high-tech and high-quality" and is grateful to work in such a workplace

5.4.2 Usability Walkthrough

A summary of the most important findings from the Usability Walkthrough performed at Telenor Budapest in April will be presented in this chapter. The full report with all the results from this walkthrough can be found in appendix 4. The walkthrough consisted of 6 stops where the researchers and the participants discussed the premises. These are all shown in the following presentation.

Usability Walkthrough Summary: Telenor Budapest

Stop 1 Work Zone: Social Zone & Kitchenette

Positive:

- Quick and easy place to access drinks(coffee or tea) and sandwiches (no warm food due to smell)
- The area is well equipped and the furniture are comfortable and modern
- Most important place in the building and is used a lot

Negative:

- Noise from social conversations, private and/or work related can be disturbing for others in the work zone. This includes phone calls.
- The multifunction of the kitchen area, as eating place and meeting place, can be conflicting as people feel like they cannot enjoy their meal because people are having a meeting at the same table

How do you work here?

- This is the social zone of the workspace and is often used for informal and/or short meetings and breakfast
- The sofa area is often used for phone calls
- Used for networking, social talks and short meetings
- Has been used for birthday celebrations, but these had to be moved down to the restaurant as they were too noisy
- The customer service department don't use this area too much as they have a more scheduled agenda where their brakes are limited

Improvements:

- Desire for hot chocolate in the coffee machine
- Less noisy coffee machine

Stop 2 Work Zone: Cubicle

Positive:

- A good alternative for the meeting rooms, as they are close to the workplace and more available
- They like the transparency and design

Negative:

- Most important; not sound proof as the walls do not reach the ceiling; sound is actually amplified
- Not private; they are actually more like an exhibition area where you feel like you are on display

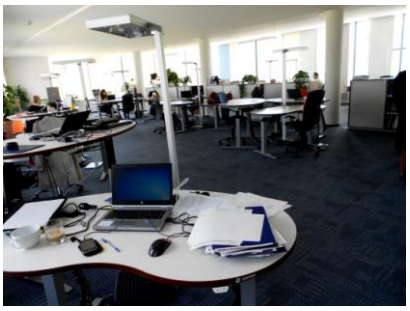
How do you work here?

- only used for very short meetings where you do not need any special equipment
- They might also be used if there is a lack of work stations in the work zone
- Used for unplanned meetings

Improvements:

- Would be nice to have the opportunity to have meetings within the work zone; this would require more equipment in the cubicles and making it sound proof
- The customer Service department mentions that they need a projector in their cubicles because they use them for coaching

Stop 3 Work Zone: Open Plan Work Zone



Positive:

- The daylight in every part of the work zone is appreciated
- The clean desk policy results in a more tidy workplace
- The rounded "no sharp edges" design on the furniture and the possibility to adjust the height of the tables so that you can either work sitting down or standing up
- The flexibility of the open plan work zone

Negative:

- Lack of oxygen - employees wants to open windows and feel the fresh air and be closer to nature
- Noise and no possibility to adjust temperature
- Management feels that being reachable at all times may result in one too many interruptions and disturbances
- Some work stations in the work zone is more traficated than others, especially if you are seated close to the social zones

How do I work here?

- Even though the clean desk policy is applied and mostly followed, many employees have preferred work stations where they sit every day if available.
- Employees makes work related phone calls inside the work zone and private ones outside the work zone as there is no place to go in the open plan space that is sound proof
- Since it is a clean desk policy in the workplace, no personal items are left on the work stations

Improvements:

- Employees want to be able to open the windows and have more control over the temperature
- More window shades for the work zone as the current ones only cover 1/3 of the actual window surface

Stop 4 Atrium

Positive:

- The possibility to "play around" in the atrium (e.g. table soccer, lego)
- Open and transparent space: The atrium is light and sunny and is a large place where people usually meet
- Like the staircase is in the middle

Negative:

- No colors: The atrium is too sterile and specially unfriendly in the winter time when it is all grey both on the inside and outside The climate in the summer makes it too hot, and there are no shades for the windows in case of bright sunlight
- The recycled air from the work units are used in this area

How do I work here?

- Sofas in the atrium can be used for phone calls, short sit down meetings, and is seen as the best place for private phone calls because of the constant background noise making it hard for others to overhear
- Atrium is used as a meeting place for networking and "chit-chat", and it brings people together in general

Improvements:

- Needs more colors and comfortable furniture
- Desks for lap tops so people can use this space for work
- more "games" for social activities

Stop 5 Atrium: Coffee Shop

Positive:

- The most social place in the building: "the facebook of the company"
- A "must have" in this building as there are no nearby coffee shops in this area
- The furniture "outside" the coffee shop is nice

Negative:

- The bakery products are not good, and not a good selection of food in general
- Very crowded in the mornings and after lunch

How do I work here?

- Used as a meeting place and it is also possible to bring the lap-top for short meetings

Improvements:

- Furniture in the "inside" area is uncomfortable and dull, it would be nice to have some more friendly and comfortable furniture like sofas etc.
- Better food and beverage selections
- Installment of a permanent TV

Step 6 Restaurant and Outside Table Area

Positive:

- Possible to sit outside for breakfast or lunch when the weather is good
- The environment in the restaurant, and nice that it is so close to the work zones.
- There is a separate sitting area in the restaurant dedicated to employees working in customer service as they only have a 30 minute break, this way they will always have a place to sit and does not have to line up

Negative:

- Very crowded
- The restaurant can be too loud as the space is not separated into sections
- People usually move tables together and this makes less room for walking as they block the space

How do I work here?

- Lunch often last for about 40 minutes and people often eat in groups
- The outside pavilion area is also often used for meetings
- The restaurant and outdoor areas are often used for group meetings when large groups of around 20 are to meet
- These areas can be used as a different way for colleagues to me meet and network, and is used every day especially for lunch

Improvements:

- There should be more colors and materials added to the restaurant

5.4.3 Results from Focus Group

The focus group is not part of the developed method, but served as a method to evaluate the usability of the Survey on Office Quality.

Reasons for Participating in the Survey

1. <u>What was the main reason for you to either participate in the survey or not?</u>

The respondents say that it is important for them to know why the survey is being sent out and who it is from when deciding whether or not to participate. They believe that the reason for it only being a 41% response rate to this survey might be because there was some confusion about the source of the survey as only selected employees received it and because it was not officially introduced by one from management in the Telenor Budapest.

2. What would make you motivated to participate in the survey?

The respondents agree that the survey was very interesting and that more employees would probably want to reply if they knew the source of the survey, if it was in their native language and if it was meant to improve their work environment.

Possible improvements are therefore identified as the most important motivation factor getting the employees to participate in the survey.

Imagine that they were making improvements in your building/workplace and they asked for employees' opinions, comments and suggestions….

3. Would you feel that it was important to participate in the survey in order to get your opinion, comments and suggestions heard?

The participants mention that they would feel it was important to participate because they want to be a part of the further development of their workplace.

4. Would you expect your opinion, comment and suggestions to be taken into consideration in case of a reconstruction of your work zone?

Some of the participants expressed that they were skeptical regarding the implications of a survey. They said that they often participated in surveys where the purpose was to improve something and after the evaluation, no actions were made.

5. How do you think you could best explain your perception of the workplace?

As mentioned before, the participants liked the survey and none of the focus participants had participated in the Usability Walkthrough the day before and could not comment on that matter.

The Survey Design

6. In general, how was the length of the survey?

The survey was not perceived as too long and the participants were also suggesting adding more questions which will be addressed under the section about the general questions.

7. How long did it take you to fill it out?

A positive comment from the respondents was that they said the survey took only 5-10 minutes to fill out, and not the previously assumed 10-15 minutes that was mentioned in the introduction to the sent out survey.

8. Did you like the way the survey was divided into section based on themes?

The respondent thought the design of the survey was good and that the themes made it easy to follow. They also liked the process bar showing how far into the survey they were at any time.

What is Your Opinion on the Questions?

9. Were the questions easy to understand?
10. Were the questions easy to answer?

The questions were both easy to understand and answer, according to the respondents. Although, people who do not understand English would have problems understanding and answering.

11. How about the language? Understandable to most in English? Should it be presented in the native language of the respondents?

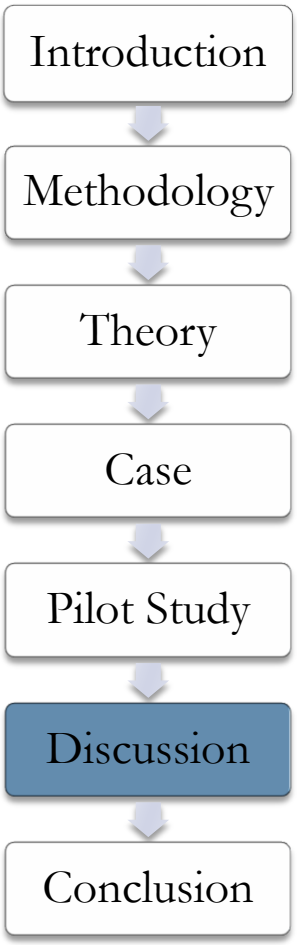
The participants discussed that the reasons for not achieving a higher response rate might be the result of a language barrier as many employees are not expected to use the English language in their day-to-day work tasks and might therefore be uncomfortable with the language.

12. In order to better understand your workplace, is there any questions you felt were missing? Some facilities not mentioned that you wanted to comment on? Or did the open questions cover this?

The respondents agreed that they wanted more questions about indoor climate because they felt that questions about indoor temperature and air quality were missing. Also, the Telenor Budapest Building contains several recreational areas like, fitness room, "game areas" in the atrium, and an outdoor sand volleyball and soccer court. The respondents therefore suggested adding a question or two about those features.

6

Discussion



The following chapter includes an analysis of the results obtained in this thesis. The background for the discussion is the research questions "Can workplace evaluation contribute to improvement and further development of workplace design for the future?" and "Is is possible to perform a more adapted assessment of the premises of a specific organization by adjusting and standardizing a workplace evaluation method, or tool, to fit the purpose of that specific company?

6.1 Discussion of the Research Questions

6.1.1 RQ 1: How can Workplace Evaluation Contribute to Improvements and Further Development of Workplace Design for the Future?

To quote Jack Tannis (2008, cited in Grech & Walters, 2008),"one of the things that we like to say is that space does not necessarily lead to transformation, but it needs to support transformation. Therefore, in any kind of cultural transformation we really need to focus on space in order to support change" (p.11). Presiser et al (1988), states that the entire building industry, in this case workplace developers, can benefit from the results provided by a post occupancy evaluation. He argues that this information can lead to improved building quality, hence information that can be used to improve the design of workplaces to better support an organizations core business and the user's work related activities.

The evaluation method developed in this thesis is a method within post occupancy evaluation. As mentioned earlier the purpose of post occupancy evaluation is to generate feedback from the evaluated building that can be used for immediate problem solving (Preiser et al, 1988). If an evaluation method is able to identify challenges within a work zone, and also explain why, it would be helpful information for workplace managers when submitting changes and improvements to the workplace design.

6.1.2 RQ 2: Is it possible to perform a more adapted assessment of the premises to a specific organization by adjusting and standardizing a workplace evaluation method, or tool, to fit the purpose of that specific company?

Research Ocjectives

To choose a method of Building evaluation that can be used in order to retrieve the information needed to make a conclusion:

1. What is the purpose of workplace evaluation?

In this thesis it was assumed that if it was possible to identify the purpose and the need for specific information from this survey, it would be possible to downsize the questionnaire to a more suitable size. In general there would be differences of opinions on what the exact purpose of workplace evaluation would be, but in this case as the thesis is meant to develop a method for use in Telenor, to assess their workplace model, it is reasonable to conclude that the purpose defined by the Head of Workplace Management should be emphasized in this thesis.

O4 Which methods exist within Building Evaluation?

Chapter 3 presented a selection of evaluation methods and tools that are available to a researcher when performing an evaluation of a building, or in this case a workplace. Chapter 3.11 presented a comparison of these methods in table 3-7.

When the method to be used in this thesis was selected, the purposes listed in the table were considered. Table 6-1 is an excerpt of table 3-7 showing only the different purposes of the evaluation tools discussed in this thesis.

In order to decide what methods would be most beneficial to use in this research, it is important to compare the listed purposed of the methods and their tools, in order to determine what the developer of the method was hoping to achieve with the evaluation.

Purpose
To encourage good building design by allowing others to learn from the experience of constructing each building.
To create a comprehensive framework and a process for involving all stakeholders, where possible.
To map out and evaluate a building's usability based on users' experiences.
To help gain more value from the design of buildings, and to assist in improving the quality of buildings.
To measure employee satisfaction about their work environment.
To find out if organization's expectations were actually fulfilled and housing goals achieved in the new workplace.

Table 6-1 Purposes of the evaluation methods

O5 Which of these, if any, methods collect data specifically on function and use of space?

There are several methods of evaluation that focuses on function and use of space, as was discussed in the summary of the section on methods in chapter 3. Although, these does also often include questions on sensitive and personal matters like work performance, social skills and habits, and more questions about the employees work environment.

The survey previously used for this purpose in pilot project performed at Telenor, was evaluated as the best choice because it was suitable for an organization focus and not only an individual focus. In retrospect it became clear that the survey was too comprehensive and time-consuming, resulting in low response rates and feedback from respondents in form of questions about the necessity of some of the more personal questions in the survey.

6.2 Discussion of Pilot Study

To develop a user friendly questionnaire that achieves a higher response rate and provides the required data to make statistical statements.

O8 The data collected by this questionnaire should provide data that can be used to analyze the current work situation in an organization and contribute to further development and improvement of workplace design

Survey

The survey was in general well received by the participants in the focus group, as it was easy to understand, easy to answer and quick to answer. However, they did have a few suggestions to

additional question to the survey. Several participants mentioned that there were no questions in the survey about the assessment on indoor climate, like air quality and temperature.

When developing The Survey on Workplace Quality, the researcher decided to eliminate the questions about indoor climate as experience shared in the expert interviews said that these were scales hard to measure because the perception of the indoor climate is individual to every human being and therefore hard to conclude on. People can simply not agree on a set temperature, and air quality can be measured to be sufficient in a technical sense, but as was discussed during the walkthrough in Budapest, people might still be convinced that the air quality is poor.

As the desirable survey response rate for Telenor was set to 50%, this study's with its 41% response rate, did not achieve this goal. However, it was considered relatively good for this study as the respondents only had a week to reply. The focus group respondents mentioned that they thought the reasons for the low response rate was due to the survey being presented in English and not in the respondents native language

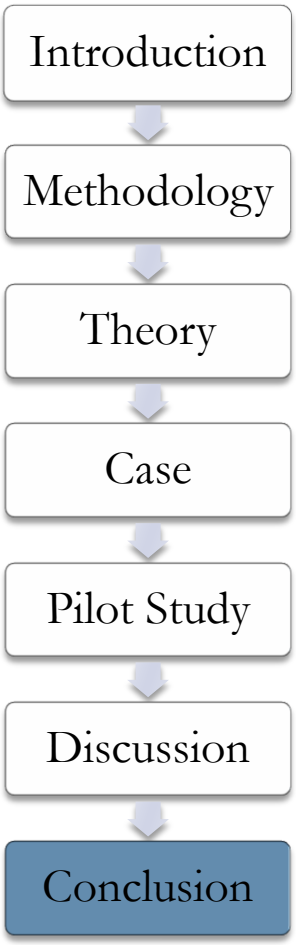
In order to get a higher response rate in the future, it is important to remember to send out a pre notification email to all participants so that they know what the survey is in regards to. It should be sent out from the local department so that the respondents get it first hand from their superiors.

Also it might be discussed if it is desirable to translate the survey into each local language in order to get a higher response rate as everyone could understand.

Walkthrough

Upon her arrival at Telenor Budapest, the researcher was already aware of some of the most prominent problem areas defined by the users. These challenges were confirmed during the walkthrough when the respondents had the opportunity to elaborate on their experiences from their workplace. The results from the walkthrough can be considered even more reliable as the walkthrough was conducted two times with different users. This might be a good way to assure a broader base of data as that the respondents from the same group might be affected by each other when sharing opinions.

7
Conclusion



7.1 Conclusion on the Research Questions

The following conclusion will first present the conclusions made regarding research question 2 , in order to conclude the thesis with workplace evaluation and how it contributes to improvement and further development of workplace design for the future.

7.1.1 RQ 2: Is it possible to perform a more adapted assessment of the premises to a specific organization by adjusting and standardizing a workplace evaluation method, or tool, to fit the purpose of that specific company?

To choose a method of Building evaluation that can be used in order to retrieve the information needed to make a conclusion:

O3 What is the purpose of workplace evaluation?

The purpose of workplace evaluation, as stated by the Head of Workplace Management at Telenor Real Estate, is to find out what the challenges in the workplace are today, in order to improve them for the future.

In her interview she stated that the goal of the evaluation method would be to change the way the company thinks about workplaces, and to test new solutions.

One of the goals for the improved workplace is to better support the work process.

O4 Which methods exist within Building Evaluation?

Several methods of building evaluation were presented in this thesis' chapter 3. It was concluded that most of the methods stated similar purposes for their assessments; to help improve workplace quality and users' satisfaction.

O5 Which of these, if any, methods collect data specifically on function and use of space?

The Survey on Workplace Quality has in this thesis been adapted to collect data specifically for this purpose and should be supplemented with the Usability Walkthrough in order to collect better supported data.

O6 Which tools are the most efficient and informative when evaluating based on the above mentioned criteria?

The tools survey questionnaire and usability walkthrough was chosen as the most efficient and informative tools as they combined collection both quantitative and qualitative data from the workplace user's perspective. The survey was adjusted and adapted in this thesis and the usability walkthrough was performed according to USE-Tool in the pilot study of this thesis.

Suggestions for layout of Final Survey and Walkthrough

O 8 To develop a user friendly questionnaire that achieves a higher response rate and provides the required data to make statistical statements.

The survey was in general well received by the participants in the focus group, as it was easy to understand, easy and quick to answer. The participants also assumed that the survey would

achieve a higher response rate if presented properly by the local management and if it was distributed in their native language.

As a result of the discussion of further development of the survey, the researcher has decided to add a section on indoor quality to the survey, with two general questions about air quality and temperature. These questions might not provide very usable data, but it is clear that the respondent have strong opinions about their indoor climate. By providing them with the opportunity to assess the indoor climate, they will not be frustrated by the fact that they are not able to share their opinion on the matter. Regarding the question about supplementing the survey with scales about the recreational areas, it was decided that the open questions would be sufficient to cover this aspect. The reason for this decision was that it would be hard to standardize a survey if it included questions about recreational areas, as these would vary widely from location to location, even within the Telenor Group.

The result of the evaluation method used in this pilot study can in a large degree be compared to USE-Tool. USE-Tool is a thorough evaluation method for usability containing several steps with tools to make qualitative assessments of a building. However, it does not provide a tool to collect quantitative data. To conclude, USE-Tool is a method that require the researcher's and user's presence during the evaluation through most of the steps. Although this might be an excellent and thorough method to use, it might be time consuming to perform in some cases. As mentioned by the Head of Workplace Management at Telenor Real Estate, it was important for an evaluation method to provide statistical results that could be presented to the decision makers in a reconstruction or development project. Another important goal of the evaluation was to retrieve data for benchmark. Statistical data is often preferred by people in business as it is a good and easy way to visualize results and to benchmark.

The researcher will therefore suggest that The Survey of Workplace Quality can be used as a supplement to applications of USE-Tool in order to collect the quantitative data needed for benchmarks and presentation purposes.

Therefore, to conclude, the method development process in this master's thesis, the main product of this research is the method for evaluation of workplaces, developed with Telenor in mind. The method consists of two tools; one that collects quantitative data through a survey questionnaire and one that collects qualitative data through a walkthrough.

O9 The data collected by this questionnaire should provide data that can be used to analyze the current work situation in an organization and contribute to further development and improvement of workplace design

As one can see from the survey results presented in appendix 3, the Enalyzer Online Survey tool provides systematic, simple to read visualizations of the results. These data can be used to measure a workplace and identify challenges in the current situation that can be improved in further development of the workplace. An experimental research of the workplace, where different workplace solutions were tested, would be an even better way to use the evaluation method as the data could be used to illustrate which of the solutions were assessed to best support the user's in their work related activities. Also, if the survey achieves good results from

an evaluation, that workplace could serve as an example for what types of changes should be made in another project in order to improve other workplaces.

7.1.1 RQ 1: How can Workplace Evaluation Contribute to Improvements and Further Development of Workplace Design for the Future?

In order to create functional workplaces for the future, which not only anticipates, but take full advantage of all the changes that are taking place, it is important to have the right methods and tools for evaluation of workplaces. With such an evaluation it is possible to identify challenges in the workplace design that can be improved in order to develop workplaces that better supports the users in their daily work task (Duffy, 1997).

A post occupancy evaluation involves a systematic evaluation of opinions, from the perspective of the users of a building, and assesses how well a building matches the users' needs (Preiser et al, 1988). As several of the presented evaluation methods state the importance of the user's assessments of their workplace when evaluating the improvements of its design, one can conclude that a workplace evaluation achieves its purpose.

The method developed in this research is best suited to be used as an evaluation tool for open plan offices, but can also be used in other types of workplaces for the same purpose. The pilot study in this research is performed in a flexible, non-territorial workplace, but most of the question in the survey tool can also be used for a workplace with cell office structure. It is concluded that it with this Evaluation of Workplace Quality method is possible to collect important data on user's perception of the workplace. This method can be used in order to identify challenges in the current situation of the workplace design. By identifying challenges in the workplace design by collecting users' experiences and opinions, it is possible to determine what needs to be changed in order to create the workplace suitable for the future.

As mentioned earlier, Telenor has developed a workplace model which has been fully or partially applied to the Telenor buildings both at the Head Quarters at Fornebu and other international locations. In order to further develop and improve the workplaces of Telenor, the method developed in this thesis can be used to evaluate the usability of the workplace by collecting both qualitative and quantitative data. The result of such an evaluation would provide Telenor with the information they need in order improve and further develop their workplaces for the future.

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Appendices

Appendix 1 The Survey on Workplace Quality (Screen shots from Enalyzer)

Appendix 2 Usability Walkthrough Guide

Appendix 3 Survey on Workplace Quality: Results from Pilot Study

Appendix 4 Usability Walkthrough: Results from Pilot Study

Appendix 5 Focus Group Interview Guide

Appendix 6 Expert Interview Guide

Appendix 7 Expert Interview Details: Lukas Windlinger Inversini

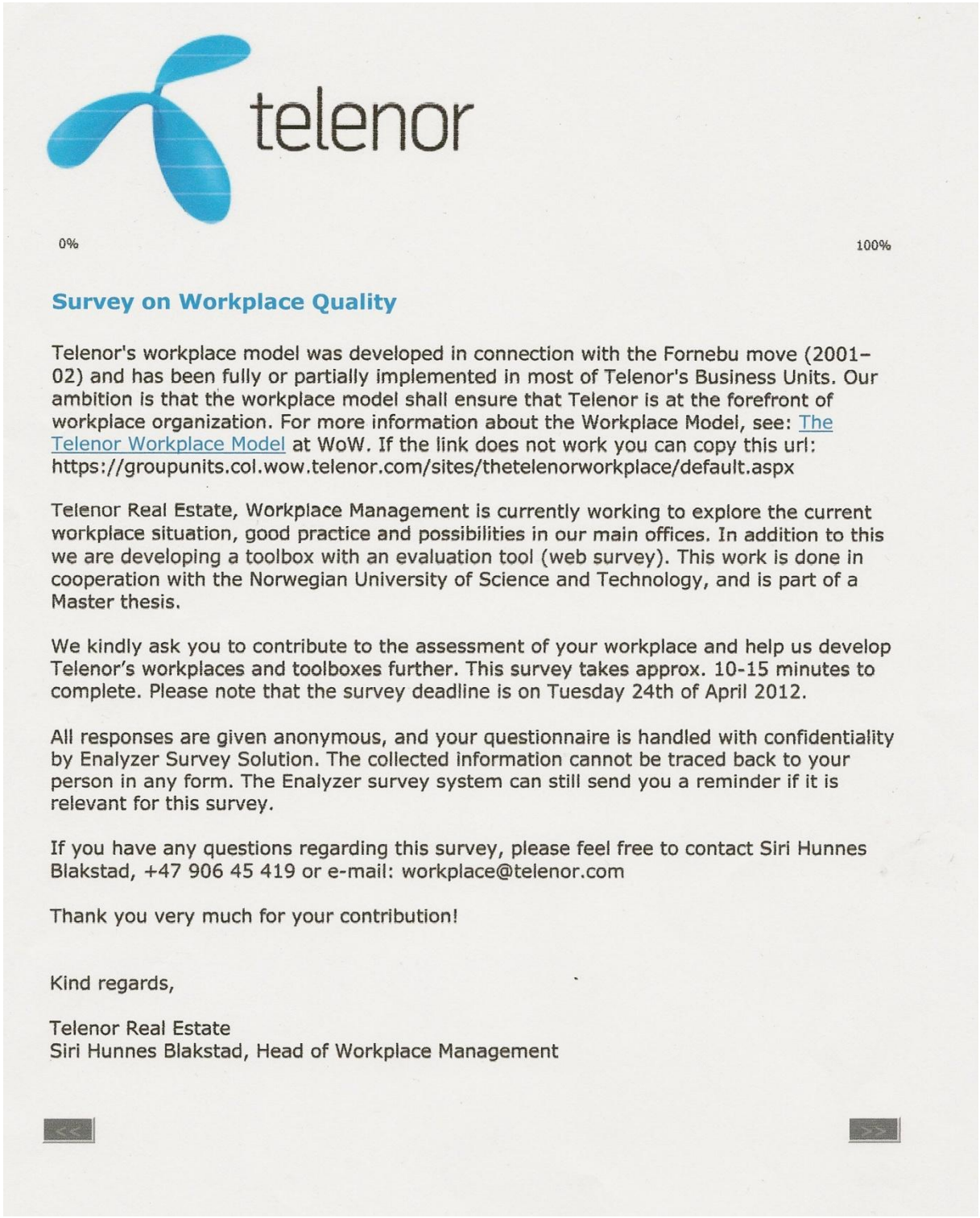
Appendix 8 Expert Interview Details: Nils Gersberg

Appendix 9 Expert Interview Details: Siri Hunne Blakstad

Appendix 10 Terminology

Appendix 1 Survey on Workplace Quality

Paige 1



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Survey on Workplace Quality

Telenor's workplace model was developed in connection with the Fornebu move (2001–02) and has been fully or partially implemented in most of Telenor's Business Units. Our ambition is that the workplace model shall ensure that Telenor is at the forefront of workplace organization. For more information about the Workplace Model, see: The Telenor Workplace Model at WoW. If the link does not work you can copy this url: https://groupunits.col.wow.telenor.com/sites/thetelenorworkplace/default.aspx

Telenor Real Estate, Workplace Management is currently working to explore the current workplace situation, good practice and possibilities in our main offices. In addition to this we are developing a toolbox with an evaluation tool (web survey). This work is done in cooperation with the Norwegian University of Science and Technology, and is part of a Master thesis.

We kindly ask you to contribute to the assessment of your workplace and help us develop Telenor's workplaces and toolboxes further. This survey takes approx. 10-15 minutes to complete. Please note that the survey deadline is on Tuesday 24th of April 2012.

All responses are given anonymous, and your questionnaire is handled with confidentiality by Enalyzer Survey Solution. The collected information cannot be traced back to your person in any form. The Enalyzer survey system can still send you a reminder if it is relevant for this survey.

If you have any questions regarding this survey, please feel free to contact Siri Hunnes Blakstad, +47 906 45 419 or e-mail: workplace@telenor.com

Thank you very much for your contribution!

Kind regards,

Telenor Real Estate
Siri Hunnes Blakstad, Head of Workplace Management

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Paige 2

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Work effectiveness

The following questions concern how the office supports your work.

Please indicate to which degree you agree with the following statements

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Our office supports effective work.							
Our office makes efficient use of the available space.							
Our office support project work.							
My workspace supports informal cooperation.							
Our office promotes Telenor's Ways of Work (WoW).							

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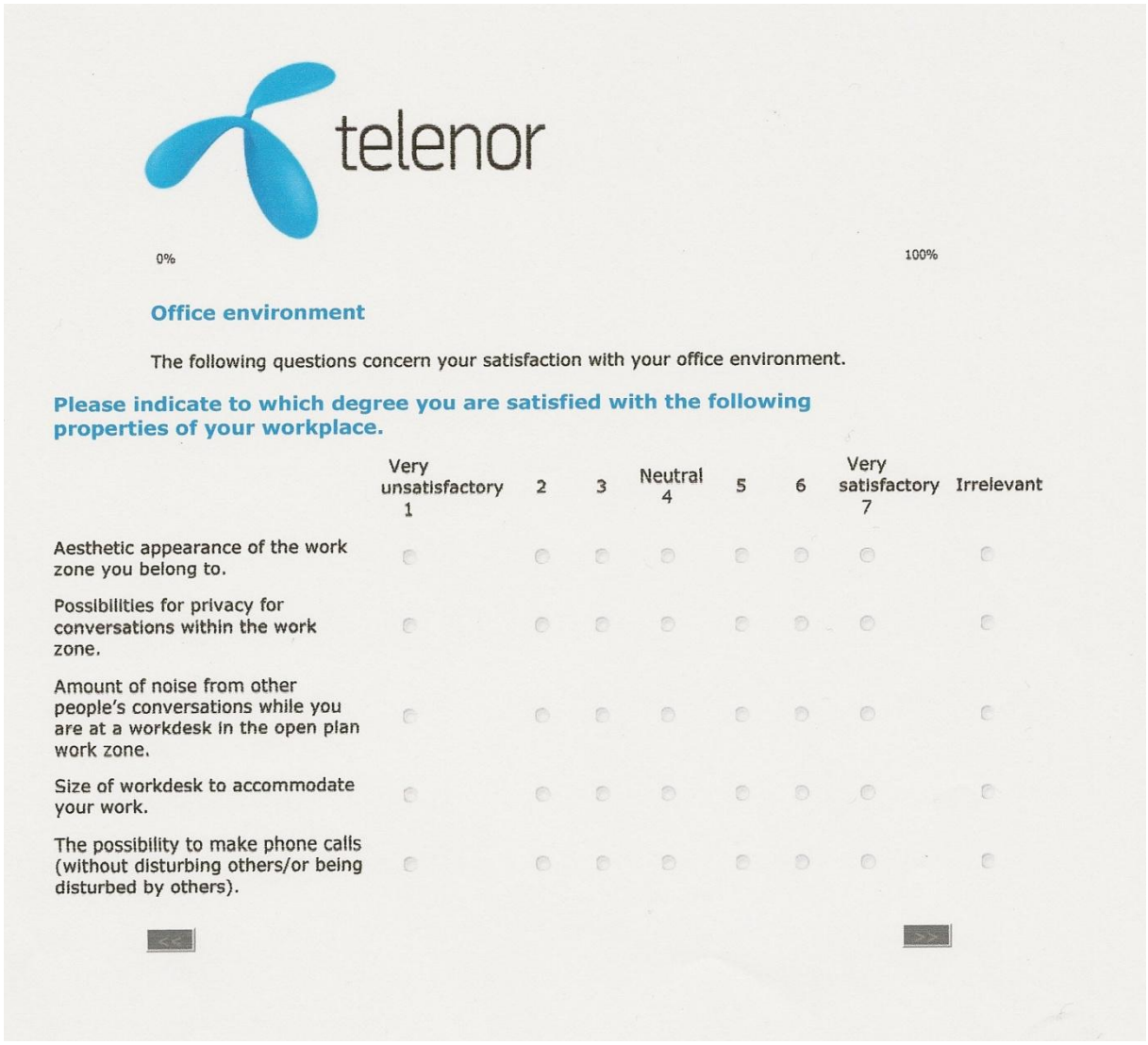
Paige 3



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Office environment

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following properties of your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Aesthetic appearance of the work zone you belong to.								
Possibilities for privacy for conversations within the work zone.								
Amount of noise from other people's conversations while you are at a workdesk in the open plan work zone.								
Size of workdesk to accommodate your work.								
The possibility to make phone calls (without disturbing others/or being disturbed by others).								

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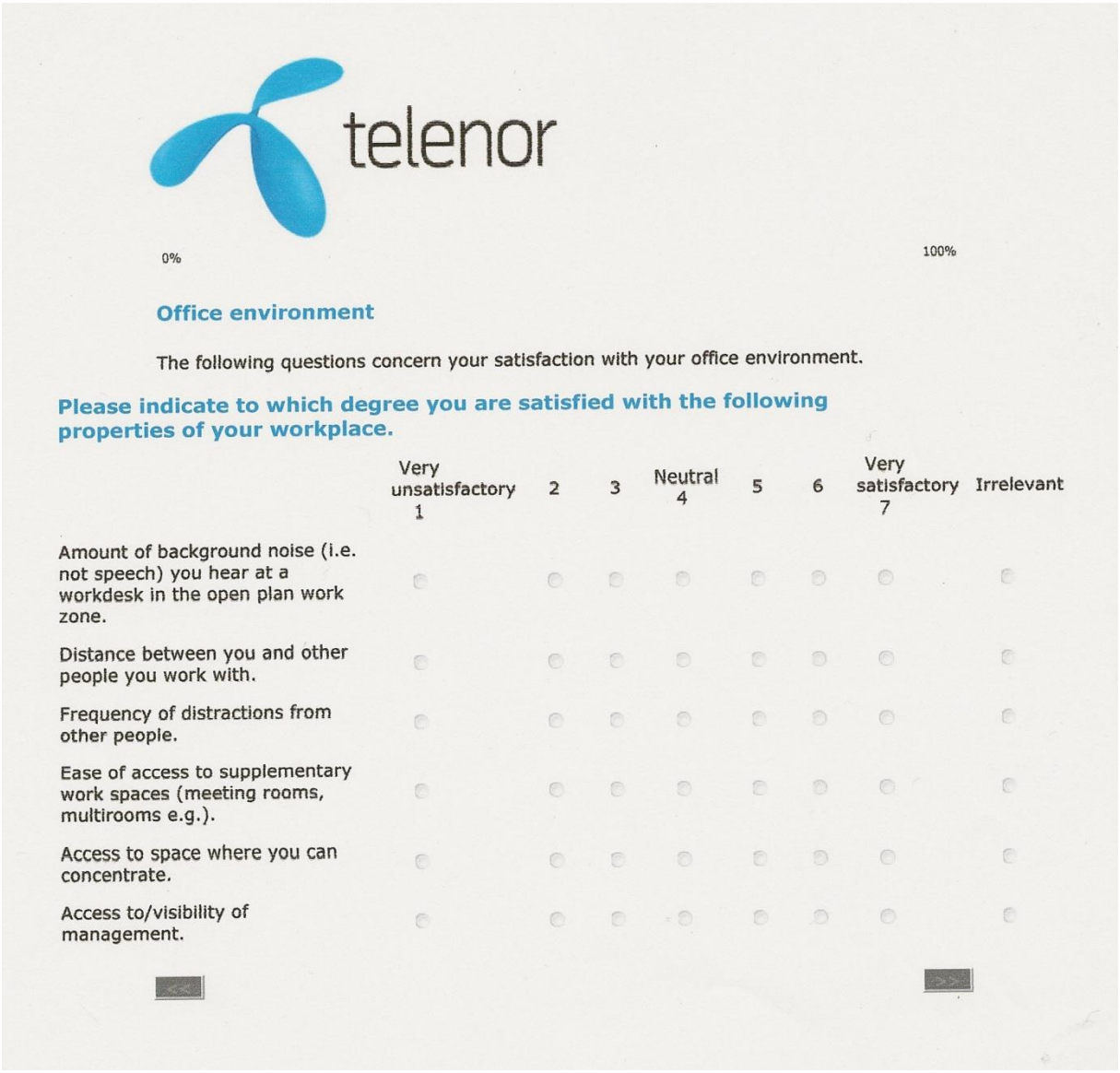
Paige 4



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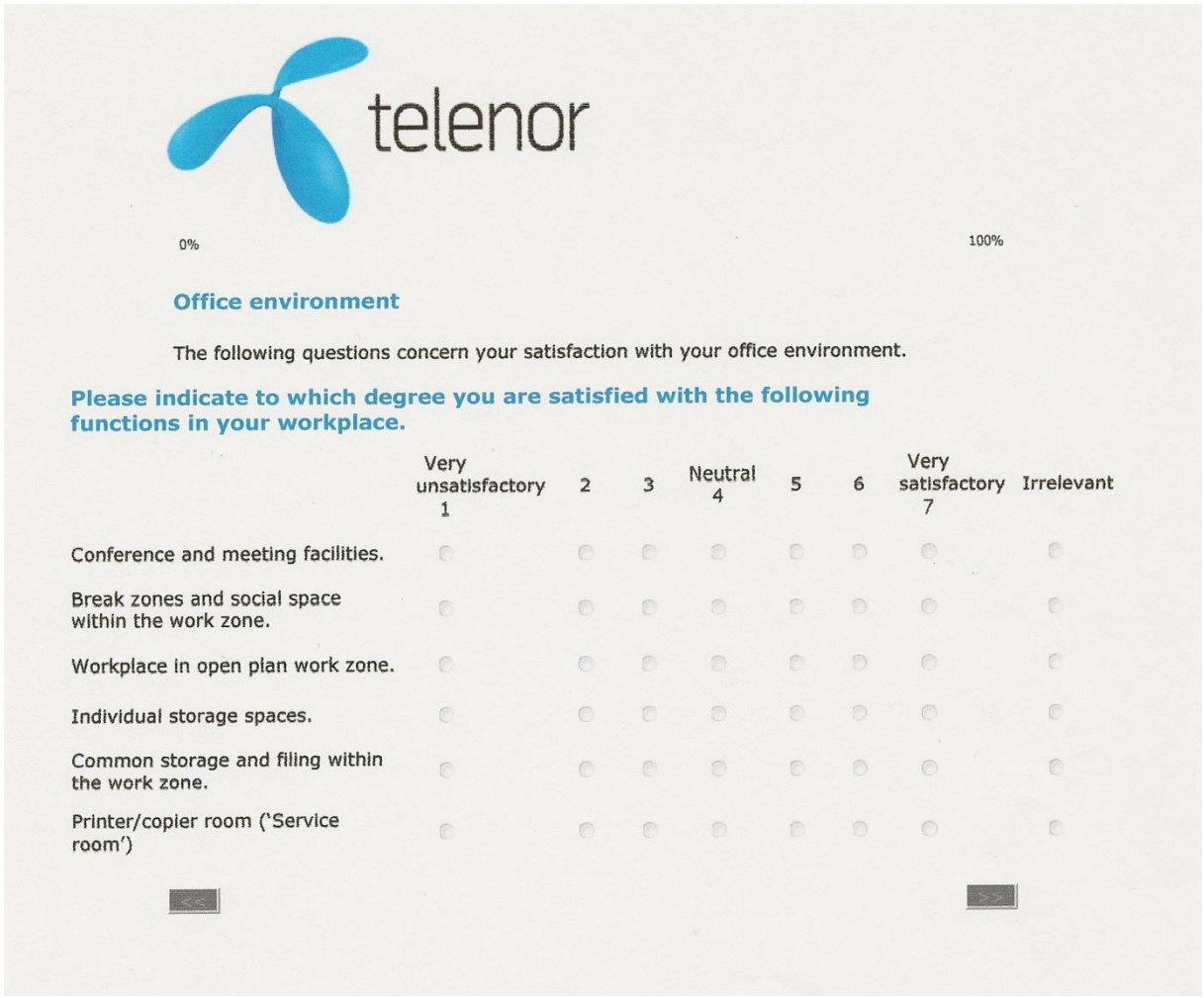
Office environment

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following properties of your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Amount of background noise (i.e. not speech) you hear at a workdesk in the open plan work zone.	○	○	○	○	○	○	○	○
Distance between you and other people you work with.	○	○	○	○	○	○	○	○
Frequency of distractions from other people.	○	○	○	○	○	○	○	○
Ease of access to supplementary work spaces (meeting rooms, multirooms e.g.).	○	○	○	○	○	○	○	○
Access to space where you can concentrate.	○	○	○	○	○	○	○	○
Access to/visibility of management.	○	○	○	○	○	○	○	○

Paige 5



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Office environment

The following questions concern your satisfaction with your office environment.

Please indicate to which degree you are satisfied with the following functions in your workplace.

	Very unsatisfactory 1	2	3	Neutral 4	5	6	Very satisfactory 7	Irrelevant
Conference and meeting facilities.	○	○	○	○	○	○	○	○
Break zones and social space within the work zone.	○	○	○	○	○	○	○	○
Workplace in open plan work zone.	○	○	○	○	○	○	○	○
Individual storage spaces.	○	○	○	○	○	○	○	○
Common storage and filing within the work zone.	○	○	○	○	○	○	○	○
Printer/copier room ('Service room')	○	○	○	○	○	○	○	○

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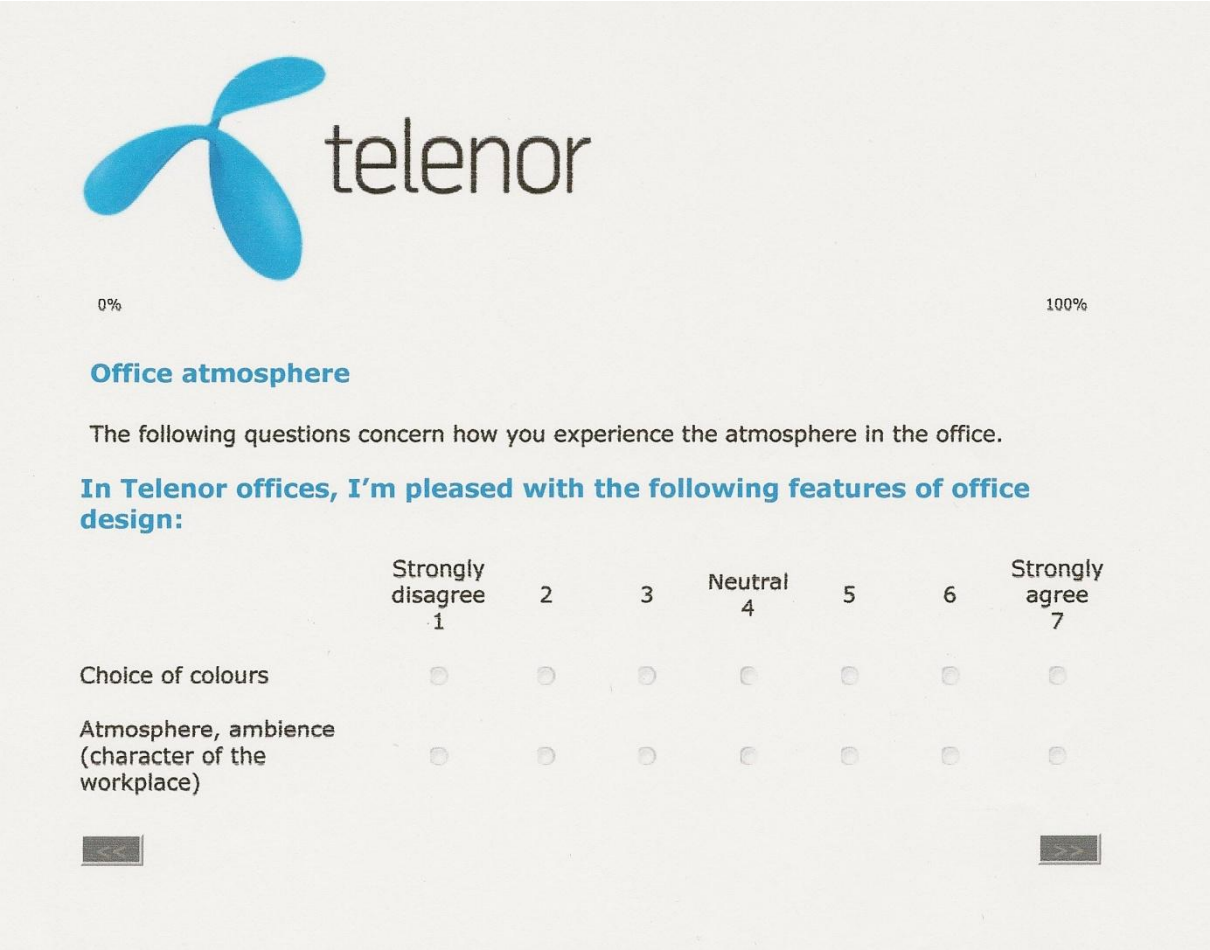
Paige 6



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Office atmosphere

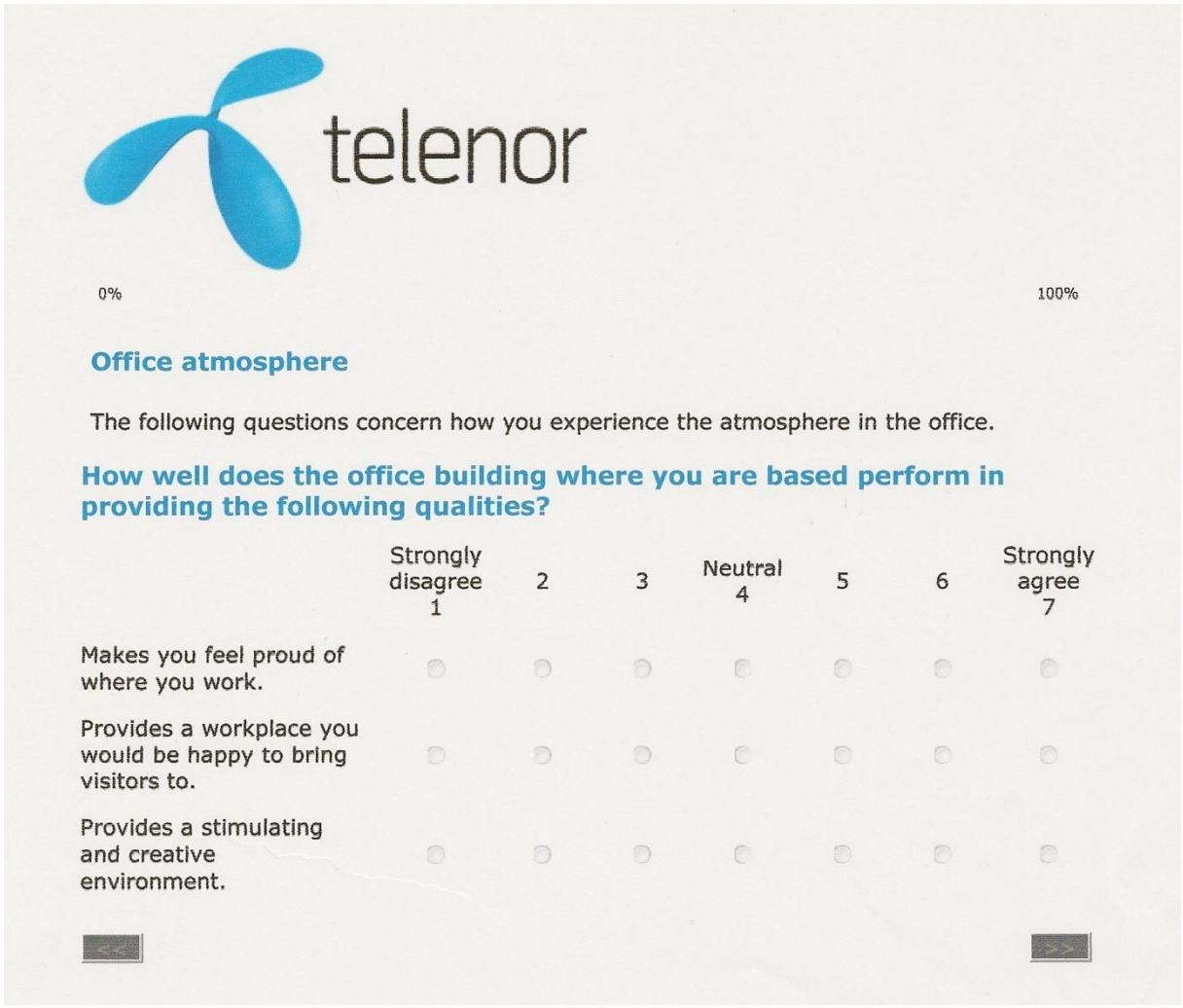
The following questions concern how you experience the atmosphere in the office.

In Telenor offices, I'm pleased with the following features of office design:

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
Choice of colours							
Atmosphere, ambience (character of the workplace)							

<< >>

Paige7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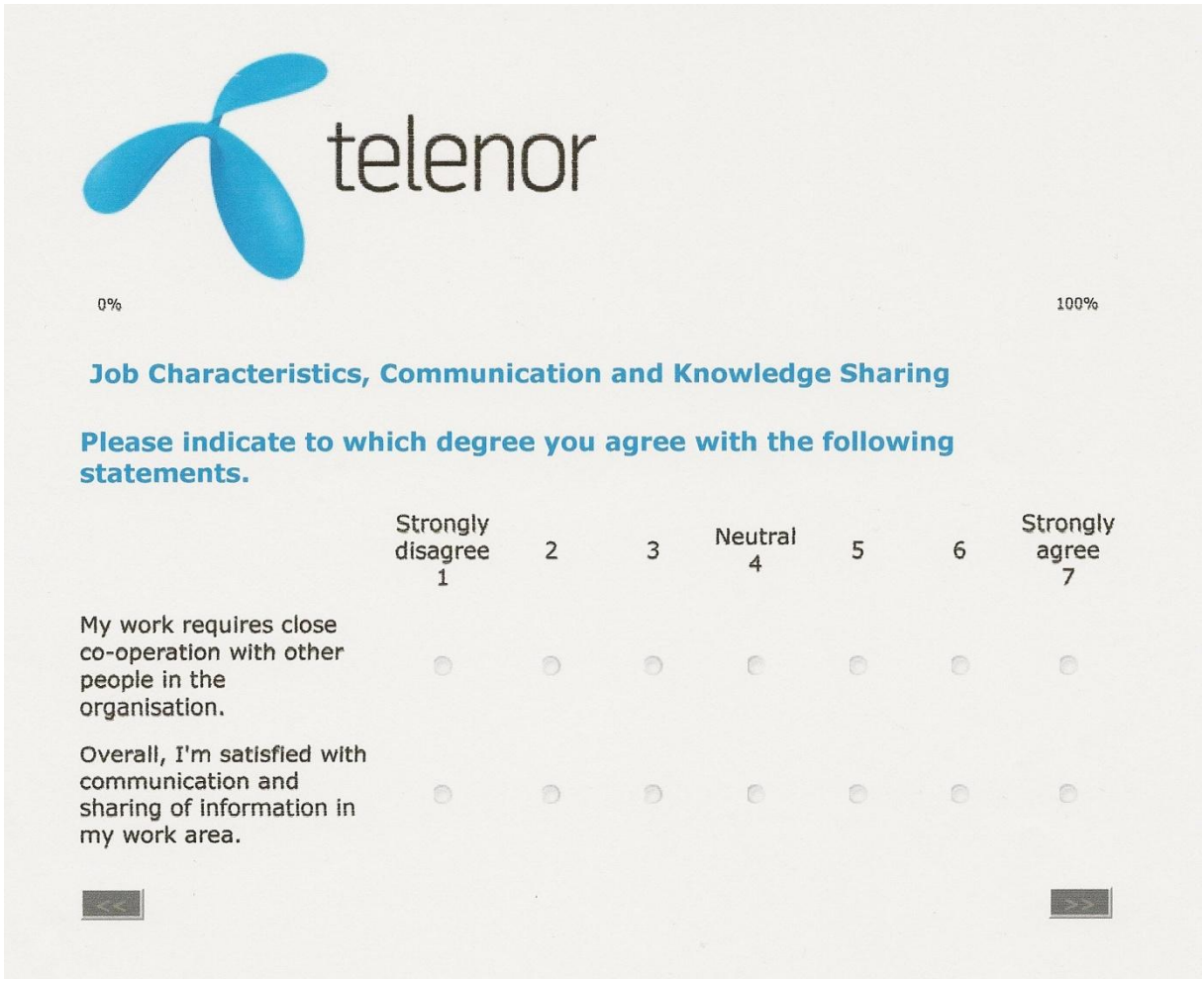
Office atmosphere
The following questions concern how you experience the atmosphere in the office.
How well does the office building where you are based perform in providing the following qualities?
Strongly disagree 1
2
3
Neutral 4
5
6
Strongly agree 7
Makes you feel proud of where you work.
Provides a workplace you would be happy to bring visitors to.
Provides a stimulating and creative environment.

Paige 8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Job Characteristics, Communication and Knowledge Sharing
Please indicate to which degree you agree with the following statements.
Strongly disagree 1
2
3
Neutral 4
5
6
Strongly agree 7
My work requires close co-operation with other people in the organisation.
Overall, I'm satisfied with communication and sharing of information in my work area.
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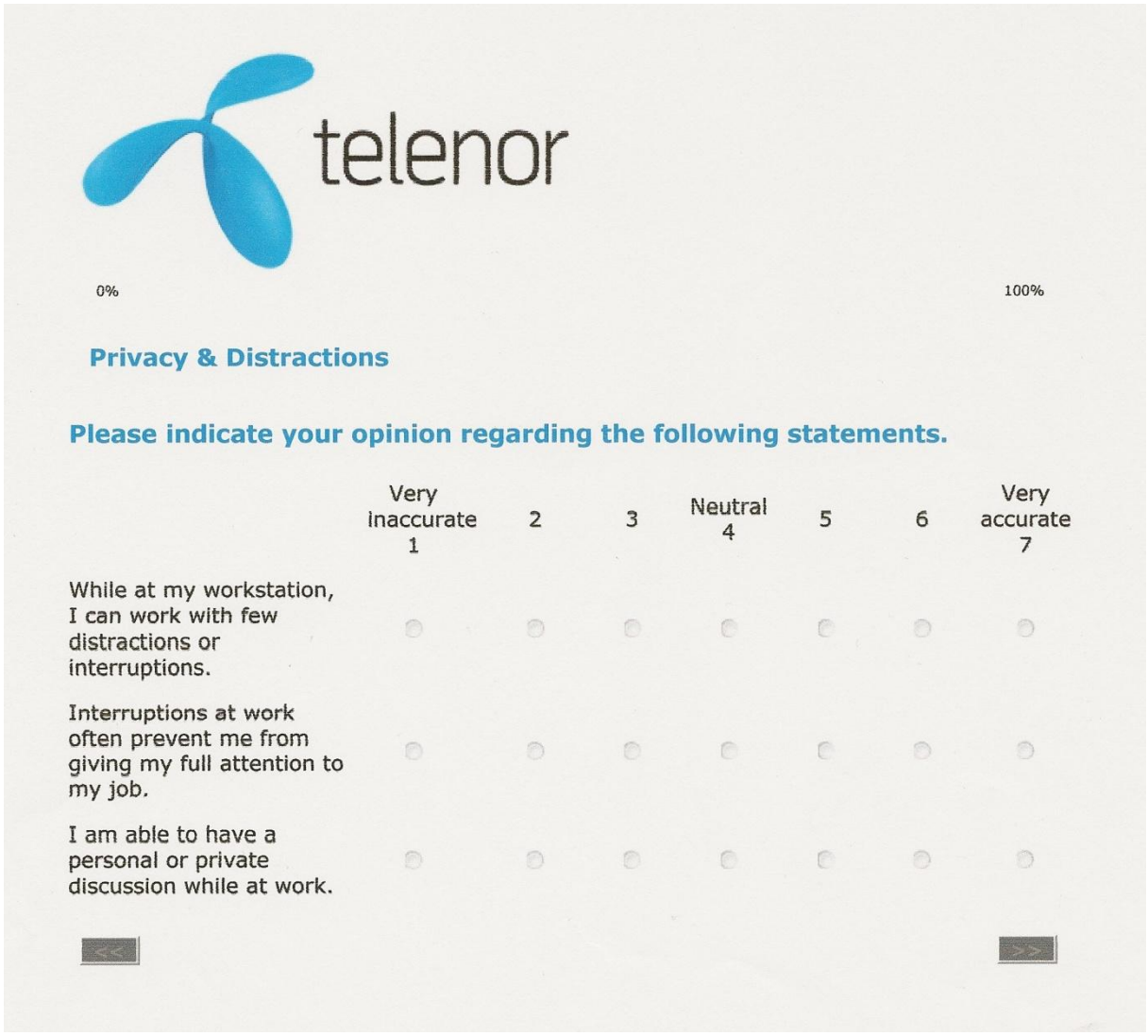
Paige 9



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Privacy & Distractions

Please indicate your opinion regarding the following statements.

	Very Inaccurate 1	2	3	Neutral 4	5	6	Very accurate 7
While at my workstation, I can work with few distractions or interruptions.	○	○	○	○	○	○	○
Interruptions at work often prevent me from giving my full attention to my job.	○	○	○	○	○	○	○
I am able to have a personal or private discussion while at work.	○	○	○	○	○	○	○

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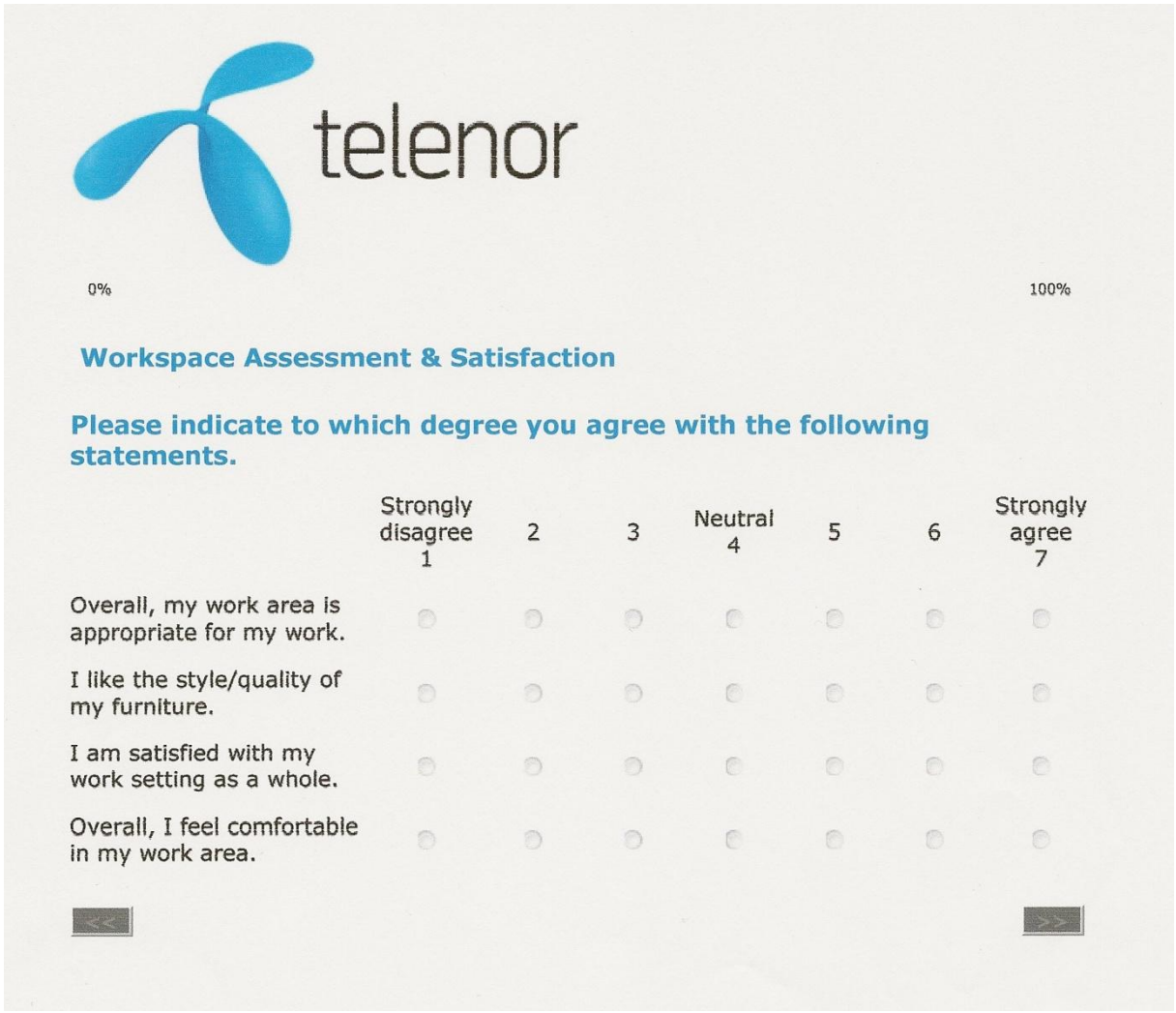
Paige 10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Workspace Assessment & Satisfaction
Please indicate to which degree you agree with the following statements.
Strongly disagree 1
2
3
Neutral 4
5
6
Strongly agree 7
Overall, my work area is appropriate for my work.
I like the style/quality of my furniture.
I am satisfied with my work setting as a whole.
Overall, I feel comfortable in my work area.
<<
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Paige 11

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Spatial Diversity

The following questions concern your perception of the different places where you are able to performe your work.

Please indicate to which degree you agree with the following statements.

	Strongly disagree 1	2	3	Neutral 4	5	6	Strongly agree 7
I can decide for myself where to perfom my work (Work zone, office building, home, on travel, with customers?)	○	○	○	○	○	○	○
I can work at different locations at this office building	○	○	○	○	○	○	○
In this office building there are spaces that I can use for distraction-free work	○	○	○	○	○	○	○
In this office building there are spaces where I can relax and recover	○	○	○	○	○	○	○
The various work enviroment, that are available to me, assist me in carrying out my work	○	○	○	○	○	○	○
My work area offer enough space for the number of employees who work there	○	○	○	○	○	○	○

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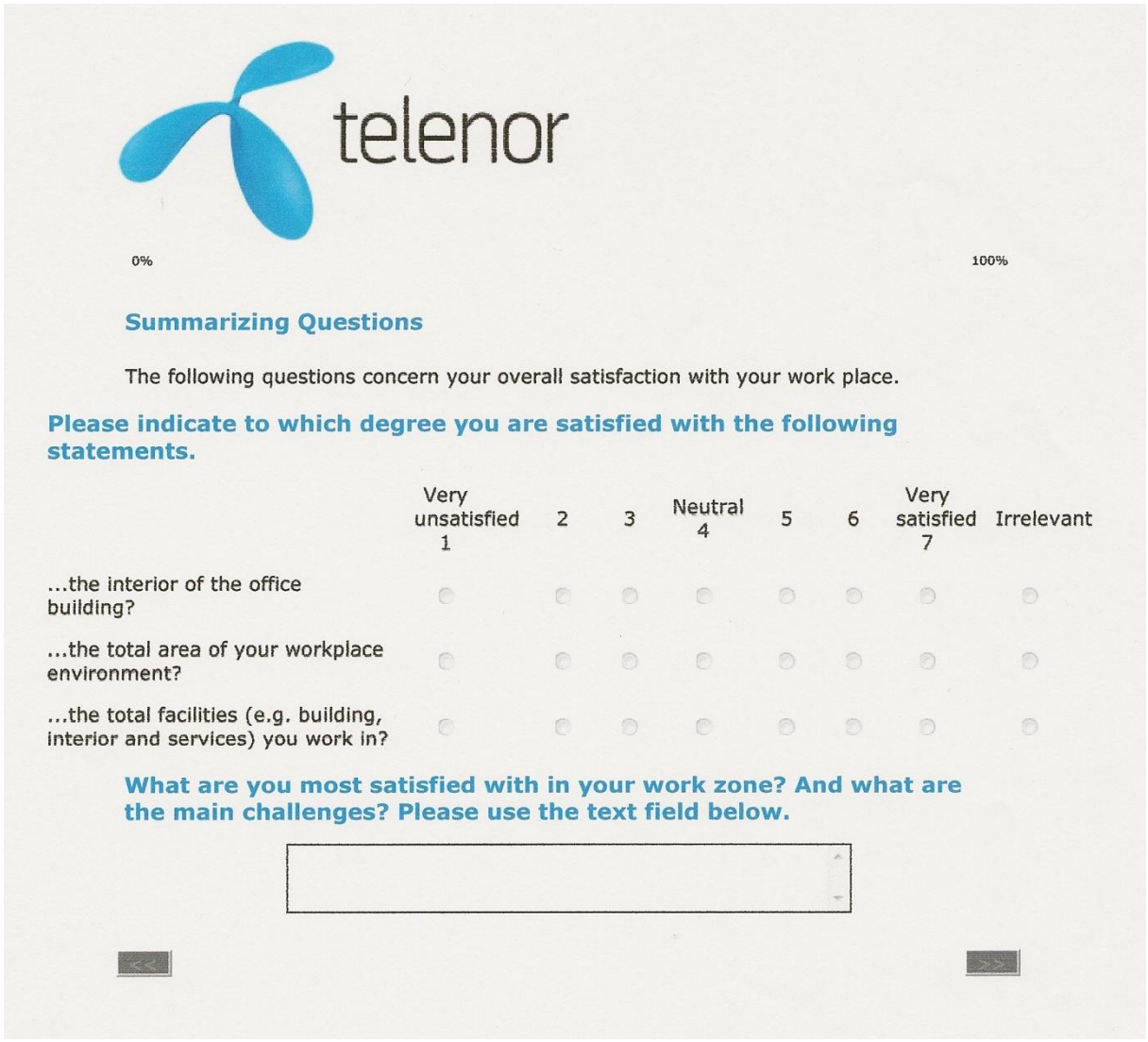
Paige 12



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Summarizing Questions

The following questions concern your overall satisfaction with your work place.

Please indicate to which degree you are satisfied with the following statements.

	Very unsatisfied 1	2	3	Neutral 4	5	6	Very satisfied 7	Irrelevant
...the interior of the office building?	○	○	○	○	○	○	○	○
...the total area of your workplace environment?	○	○	○	○	○	○	○	○
...the total facilities (e.g. building, interior and services) you work in?	○	○	○	○	○	○	○	○

What are you most satisfied with in your work zone? And what are the main challenges? Please use the text field below.

Paige 13

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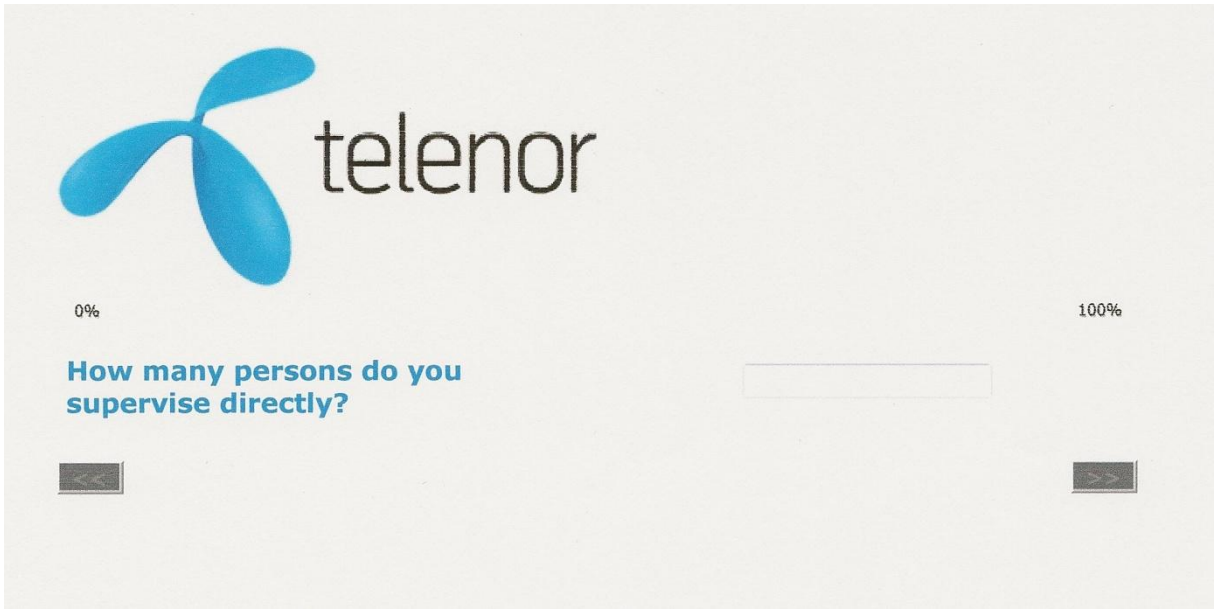
Background
Gender
Male
Female
Your age
Up to 29
30-39
40-49
50 and above
Job tenure (time in years)
Degree of employment
Part time
Full time
Do you have supervisory responsibilities?
Yes
No
<<
>>

Paige 14



Paige 15

Paige 16

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Submit your survey
You have now completed the survey. Please press "End Survey" to submit and register your answers.
Thank you for your contribution!
Kind Regards,
Telenor Real Estate
Siri Hunnes Blakstad, Head of Workplace Management
<<
End survey

WALKTHROUGH

Telenor Budapest

Role & Department .....

Age .....

Gender .....

Stop 1 Work Zone: Social Zone & Kitchenette

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Stop 2 Work Zone: Cubicle

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Stop 3 Work Zone: Open Plan Work Zone

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Stop 4 Atrium

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Stop 5 Atrium: Coffee Shop

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Stop 6 Restaurant , Outside Tables

Your experiences

Positive

Negative:

How do you work here?

Improvements?

Survey on Workplace Quality

Survey on Workplace Quality Participant Statistics

	Total
What are you most satisfied with in your work zone? And what are the main challenges? Please use the text field below.	15

	Total	
Gender	**Percentage**	**Number**
Male	48 %	21
Female	52 %	23
Total	**100 %**	**44**

	Total	
Your age	**Percentage**	**Number**
Up to 29	20 %	9
30-39	55 %	24
40-49	18 %	8
50 and above	7 %	3
Total	**100 %**	**44**

	Total
Job tenure (time in years)	44

	Total	
Degree of employment	**Percentage**	**Number**
Part time	7 %	3
Full time	93 %	41
Total	**100 %**	**44**

	Total	
Do you have supervisory responsibilities?	**Percentage**	**Number**
Yes	36 %	16
No	64 %	28
Total	**100 %**	**44**

	Total
How many persons do you supervise directly?	16

	Total
Do you have any additional comments regarding your work zone? Please use the text field below. We appreciate all comments!	11

Responses from the Survey on Workplace Quality performed at Telnor Budapest

Work Effektiveness

														Total	
Please indicate to which degree you agree with the following statements	**Strongly disagree 1 **		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
Our office supports effective work.	0 %	0	2 %	1	11 %	5	5 %	2	32 %	14	34 %	15	16 %	7	100 %	44
Our office makes efficient use of the available space.	0 %	0	0 %	0	7 %	3	11 %	5	32 %	14	32 %	14	18 %	8	100 %	44
Our office support project work.	0 %	0	2 %	1	5 %	2	14 %	6	14 %	6	43 %	19	23 %	10	100 %	44
My workspace supports informal cooperation.	0 %	0	0 %	0	2 %	1	7 %	3	23 %	10	39 %	17	30 %	13	100 %	44
Our office promotes Telenor's Ways of Work (WoW).	0 %	0	0 %	0	5 %	2	11 %	5	25 %	11	41 %	18	18 %	8	100 %	44
Total	0 %	0	1 %	2	6 %	13	10 %	21	25 %	55	38 %	83	21 %	46	100 %	220

Office Environment part. 1

																Total	
Please indicate to which degree you are satisfied with the following properties of your workplace.	**Very unsatisfactory 1 **		**2**		**3**		**Neutral 4 **		**5**		**6**		**Very satisfactory 7 **		**Irrelevant**		**Percentage**	**Number**
Aesthetic appearance of the work zone you belong to.	0 %	0	0 %	0	0 %	0	14 %	6	23 %	10	43 %	19	20 %	9	0 %	0	100 %	44
Possibilities for privacy for conversations within the work zone.	16 %	7	25 %	11	30 %	13	7 %	3	11 %	5	9 %	4	2 %	1	0 %	0	100 %	44
Amount of noise from other people's conversations while you are at a workdesk in the open plan work zone.	0 %	0	32 %	14	20 %	9	18 %	8	23 %	10	5 %	2	2 %	1	0 %	0	100 %	44
Size of workdesk to accommodate your work.	0 %	0	2 %	1	5 %	2	9 %	4	7 %	3	34 %	15	41 %	18	2 %	1	100 %	44
The possibility to make phone calls (without disturbing others/or being disturbed by others).	14 %	6	27 %	12	16 %	7	16 %	7	14 %	6	7 %	3	7 %	3	0 %	0	100 %	44
Total	6 %	13	17 %	38	14 %	31	13 %	28	15 %	34	20 %	43	15 %	32	0 %	1	100 %	220

Office Environment part. 2

																Total	
Please indicate to which degree you are satisfied with the following properties of your workplace.	**Very unsatisfactory 1 **		**2**		**3**		**Neutral 4 **		**5**		**6**		**Very satisfactory 7 **		**Irrelevant**		**Percentage**	**Number**
Amount of background noise (i.e. not speech) you hear at a workdesk in the open plan work zone.	0 %	0	14 %	6	14 %	6	23 %	10	18 %	8	20 %	9	11 %	5	0 %	0	100 %	44
Distance between you and other people you work with.	2 %	1	5 %	2	2 %	1	14 %	6	25 %	11	39 %	17	14 %	6	0 %	0	100 %	44
Frequency of distractions from other people.	2 %	1	5 %	2	14 %	6	30 %	13	16 %	7	27 %	12	5 %	2	2 %	1	100 %	44
Ease of access to supplementary work spaces (meeting rooms, multirooms e.g.).	2 %	1	5 %	2	23 %	10	14 %	6	23 %	10	27 %	12	7 %	3	0 %	0	100 %	44
Access to space where you can concentrate.	9 %	4	18 %	8	27 %	12	14 %	6	14 %	6	16 %	7	2 %	1	0 %	0	100 %	44
Access to/visibility of management.	0 %	0	5 %	2	2 %	1	16 %	7	20 %	9	41 %	18	16 %	7	0 %	0	100 %	44
Total	3 %	7	8 %	22	14 %	36	18 %	48	19 %	51	28 %	75	9 %	24	0 %	1	100 %	264

Office Environment part. 3

																Total	
Please indicate to which degree you are satisfied with the following functions in your workplace.	**Very unsatisfactory 1 **		**2**		**3**		**Neutral 4 **		**5**		**6**		**Very satisfactory 7 **		**Irrelevant**		**Percentage**	**Number**
Conference and meeting facilities.	0 %	0	2 %	1	14 %	6	14 %	6	32 %	14	30 %	13	9 %	4	0 %	0	100 %	44
Break zones and social space within the work zone.	0 %	0	7 %	3	11 %	5	9 %	4	23 %	10	36 %	16	14 %	6	0 %	0	100 %	44
Workplace in open plan work zone.	0 %	0	5 %	2	14 %	6	14 %	6	25 %	11	20 %	9	16 %	7	7 %	3	100 %	44
Individual storage spaces.	5 %	2	9 %	4	14 %	6	23 %	10	20 %	9	14 %	6	16 %	7	0 %	0	100 %	44
Common storage and filing within the work zone.	5 %	2	5 %	2	14 %	6	25 %	11	18 %	8	14 %	6	11 %	5	9 %	4	100 %	44
Printer/copier room ('Service room')	0 %	0	0 %	0	0 %	0	14 %	6	25 %	11	30 %	13	32 %	14	0 %	0	100 %	44
Total	2 %	4	5 %	12	11 %	29	16 %	43	24 %	63	24 %	63	16 %	43	3 %	7	100 %	264

Office Atmosphere part. 1

															Total	
In Telenor offices, I'm pleased with the following features of office design:	**Strongly disagree 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
Choice of colours	2 %	1	11 %	5	16 %	7	30 %	13	20 %	9	16 %	7	5 %	2	100 %	44
Atmosphere, ambience (character of the workplace)	0 %	0	0 %	0	14 %	6	20 %	9	20 %	9	36 %	16	9 %	4	100 %	44
Total	1 %	1	6 %	5	15 %	13	25 %	22	20 %	18	26 %	23	7 %	6	100 %	88

Office Atmosphere part. 2

															Total	
How well does the office building where you are based perform in providing the following qualities?	**Strongly disagree 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
Makes you feel proud of where you work.	0 %	0	0 %	0	0 %	0	2 %	1	18 %	8	36 %	16	43 %	19	100 %	44
Provides a workplace you would be happy to bring visitors to.	0 %	0	2 %	1	0 %	0	5 %	2	19 %	8	37 %	16	37 %	16	98 %	43
Provides a stimulating and creative environment.	0 %	0	5 %	2	7 %	3	20 %	9	39 %	17	18 %	8	11 %	5	100 %	44
Total	0 %	0	2 %	3	2 %	3	9 %	12	25 %	33	31 %	40	31 %	40	100 %	131

Job Characteristics, Communication and Knowledge Sharing

															Total	
Please indicate to which degree you agree with the following statements.	**Strongly disagree 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
My work requires close co-operation with other people in the organisation.	0 %	0	0 %	0	2 %	1	9 %	4	27 %	12	36 %	16	25 %	11	100 %	44
Overall, I'm satisfied with communication and sharing of information in my work area.	0 %	0	2 %	1	7 %	3	9 %	4	27 %	12	41 %	18	14 %	6	100 %	44
Total	0 %	0	1 %	1	5 %	4	9 %	8	27 %	24	39 %	34	19 %	17	100 %	88

Privacy and Distraction

														Total	
Please indicate your opinion regarding the following statements.	**Very inaccurate 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Very accurate 7 **		**Percentage**	**Number**
While at my workstation, I can work with few distractions or interruptions.	2 %	1	14 %	6	20 %	9	18 %	8	30 %	13	14 %	6	2 %	1	100 %	44
Interruptions at work often prevent me from giving my full attention to my job.	2 %	1	23 %	10	12 %	5	16 %	7	35 %	15	7 %	3	5 %	2	98 %	43
I am able to have a personal or private discussion while at work.	9 %	4	27 %	12	18 %	8	23 %	10	14 %	6	5 %	2	5 %	2	100 %	44
Total	5 %	6	21 %	28	17 %	22	19 %	25	26 %	34	8 %	11	4 %	5	100 %	131

Workspace Assessment & Satisfaction

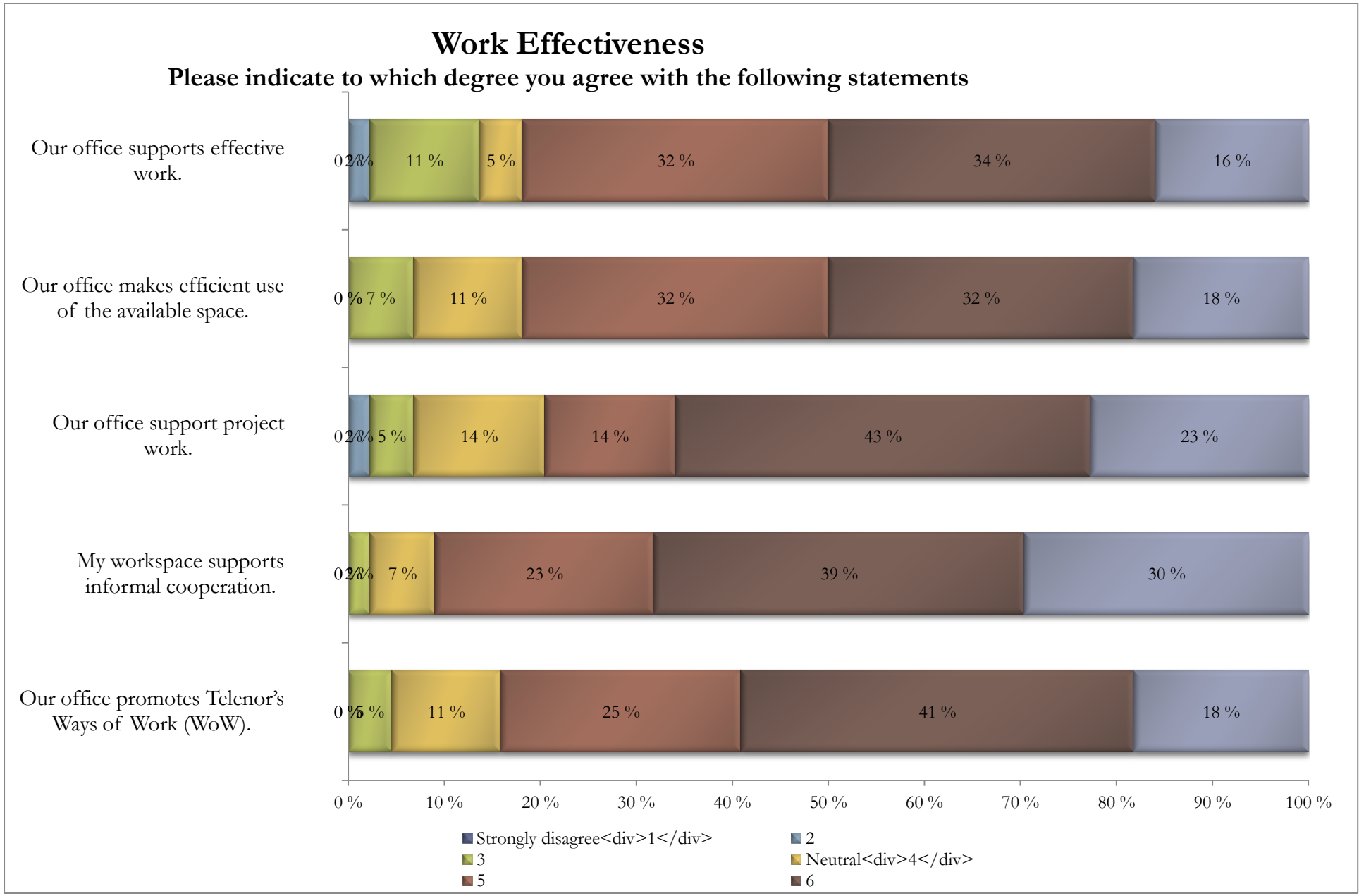
														Total	
Please indicate to which degree you agree with the following statements.	**Strongly disagree 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
Overall, my work area is appropriate for my work.	0 %	0	0 %	0	5 %	2	11 %	5	41 %	18	23 %	10	20 %	9	100 %	44
I like the style/quality of my furniture.	0 %	0	0 %	0	2 %	1	16 %	7	21 %	9	30 %	13	30 %	13	98 %	43
I am satisfied with my work setting as a whole.	0 %	0	0 %	0	5 %	2	14 %	6	23 %	10	30 %	13	30 %	13	100 %	44
Overall, I feel comfortable in my work area.	0 %	0	2 %	1	5 %	2	11 %	5	30 %	13	25 %	11	27 %	12	100 %	44
Total	0 %	0	1 %	1	4 %	7	13 %	23	29 %	50	27 %	47	27 %	47	100 %	175

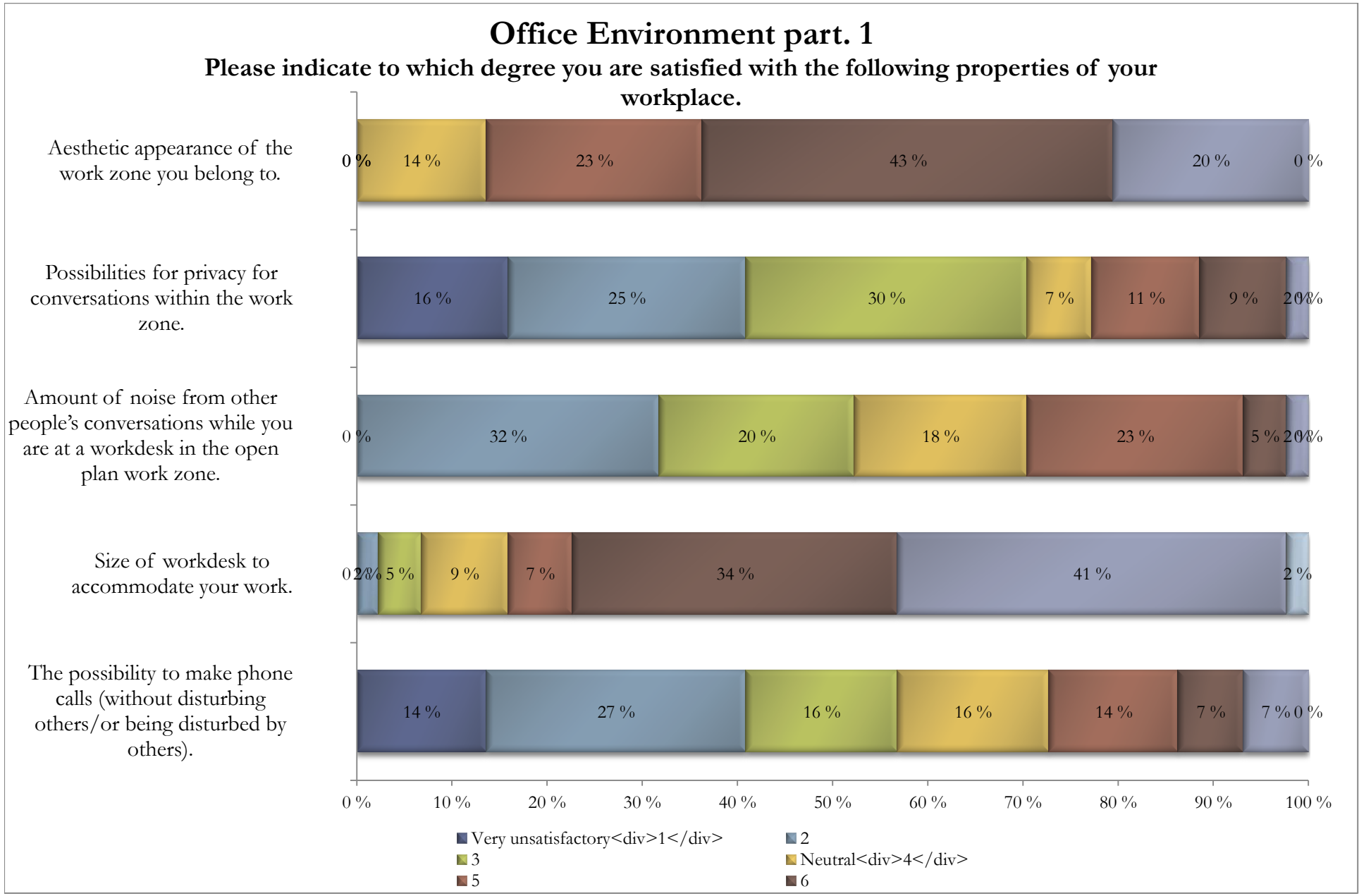
Spatial Diversity

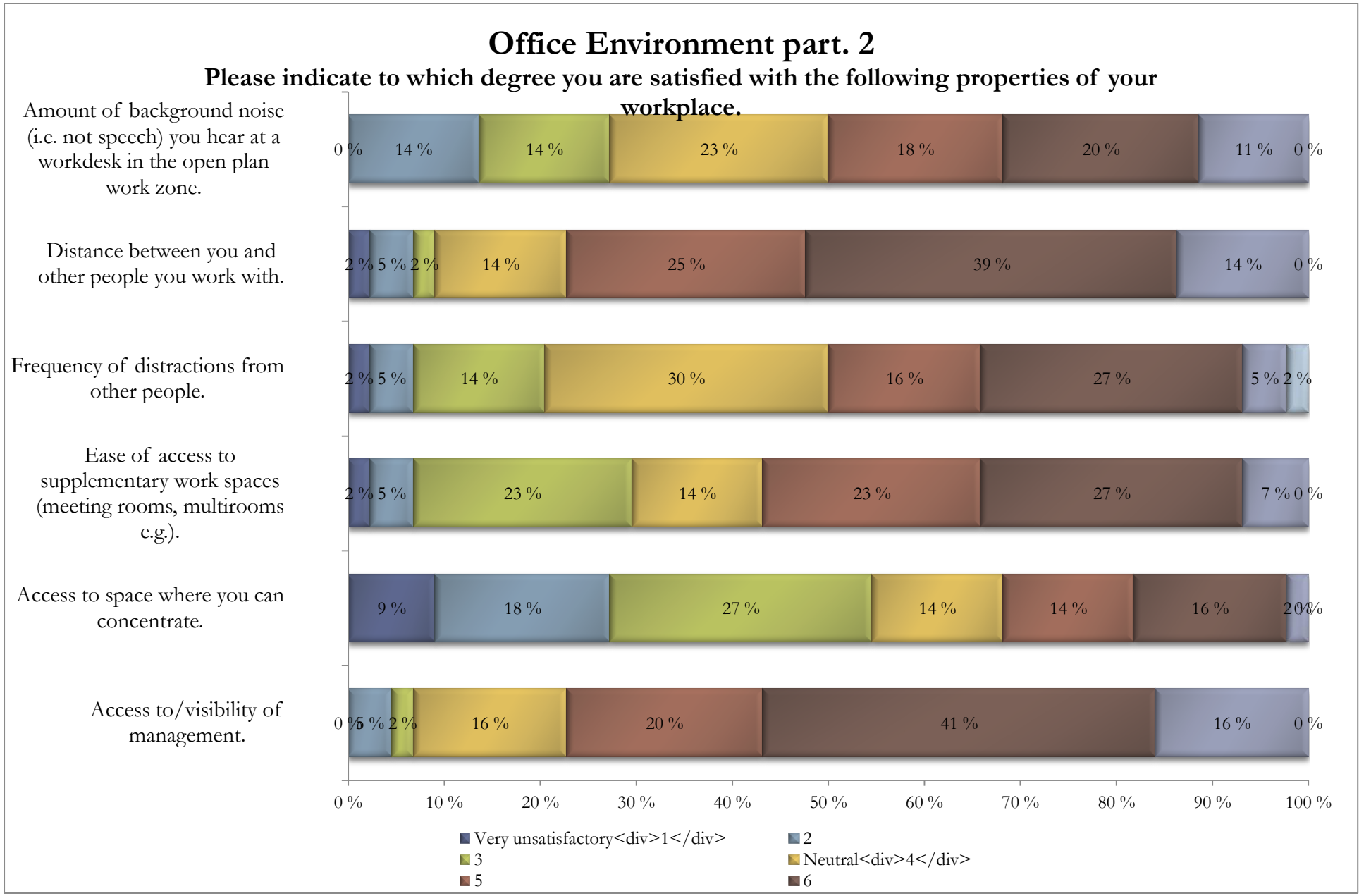
														Total	
Please indicate to which degree you agree with the following statements.	**Strongly disagree 1**		**2**		**3**		**Neutral 4 **		**5**		**6**		**Strongly agree 7 **		**Percentage**	**Number**
I can decide for myself where to perfom my work (Work zone, office building, home, on travel, with customers?)	2 %	1	2 %	1	11 %	5	18 %	8	36 %	16	16 %	7	14 %	6	100 %	44
I can work at different locations at this office building	2 %	1	7 %	3	7 %	3	16 %	7	32 %	14	25 %	11	11 %	5	100 %	44
In this office building there are spaces that I can use for distraction-free work	7 %	3	9 %	4	23 %	10	25 %	11	18 %	8	9 %	4	9 %	4	100 %	44
In this office building there are spaces where I can relax and recover	11 %	5	16 %	7	23 %	10	14 %	6	23 %	10	5 %	2	9 %	4	100 %	44
The various work enviroment, that are available to me, assist me in carrying out my work	0 %	0	2 %	1	9 %	4	34 %	15	30 %	13	18 %	8	7 %	3	100 %	44
My work area offer enough space for the number of employees who work there	5 %	2	9 %	4	16 %	7	11 %	5	23 %	10	27 %	12	9 %	4	100 %	44
Total	5 %	12	8 %	20	15 %	39	20 %	52	27 %	71	17 %	44	10 %	26	100 %	264

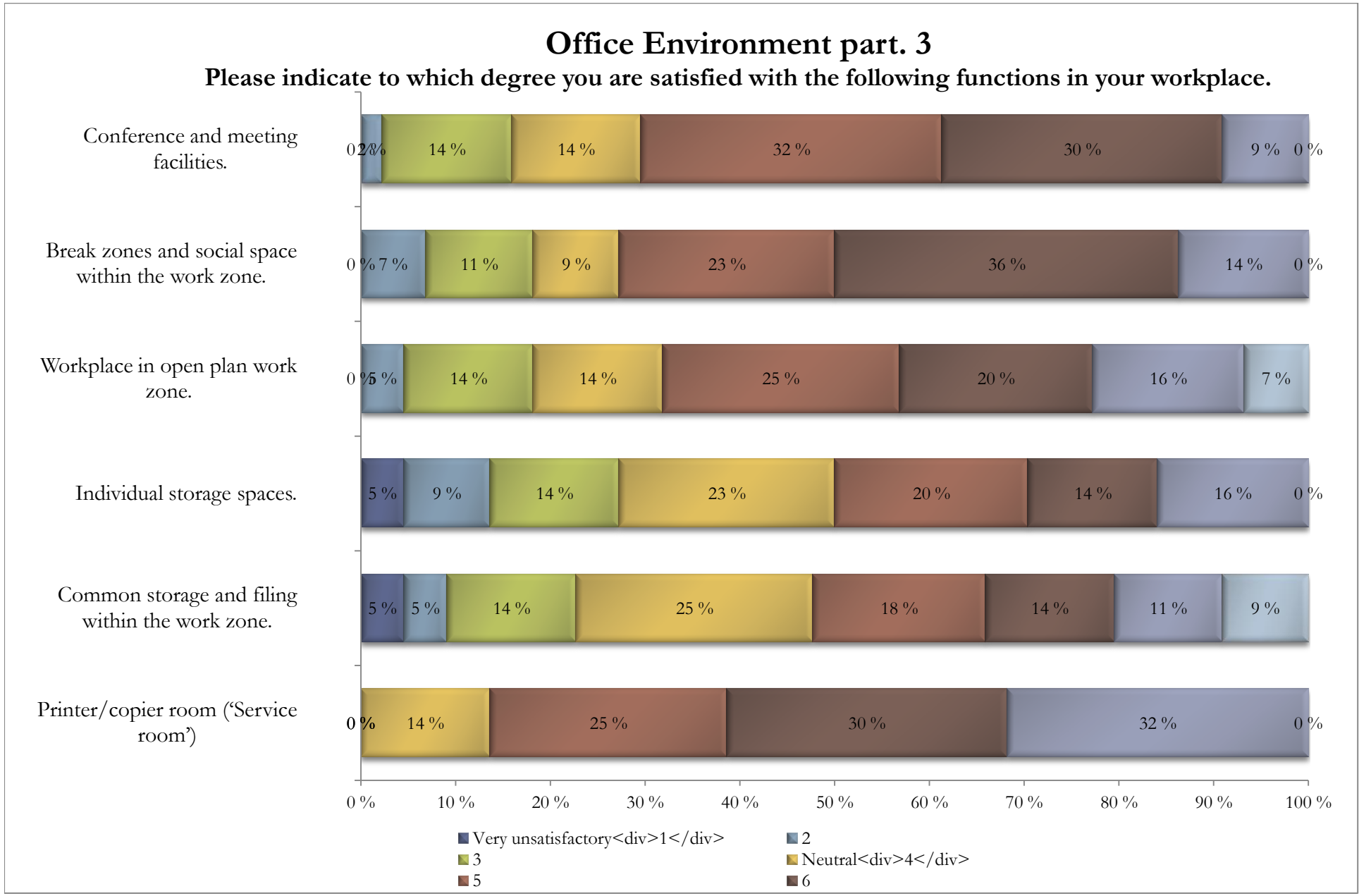
Summarizing Questions

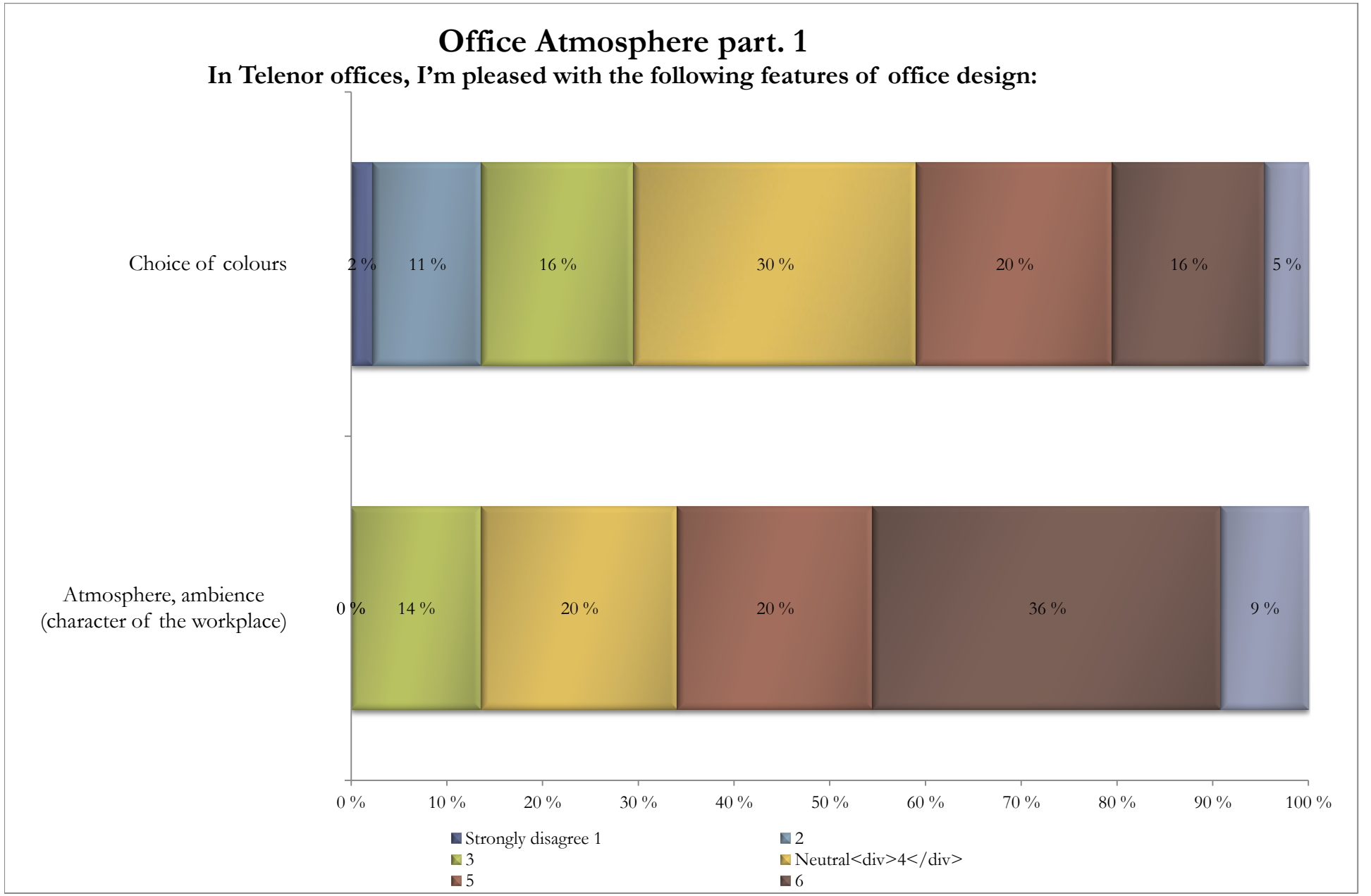
															Total	
Please indicate to which degree you are satisfied with the following statements.	**Very unsatisfied 1 **		**2**		**3**		**Neutral 4 **		**5**		**6**		**Very satisfied 7 **		**Irrelevant**		**Percentage**	**Number**
...the interior of the office building?	0 %	0	0 %	0	7 %	3	9 %	4	50 %	22	16 %	7	18 %	8	0 %	0	100 %	44
...the total area of your workplace environment?	0 %	0	0 %	0	7 %	3	2 %	1	30 %	13	41 %	18	20 %	9	0 %	0	100 %	44
...the total facilities (e.g. building, interior and services) you work in?	0 %	0	2 %	1	2 %	1	7 %	3	34 %	15	36 %	16	18 %	8	0 %	0	100 %	44
Total	0 %	0	1 %	1	5 %	7	6 %	8	38 %	50	31 %	41	19 %	25	0 %	0	100 %	132

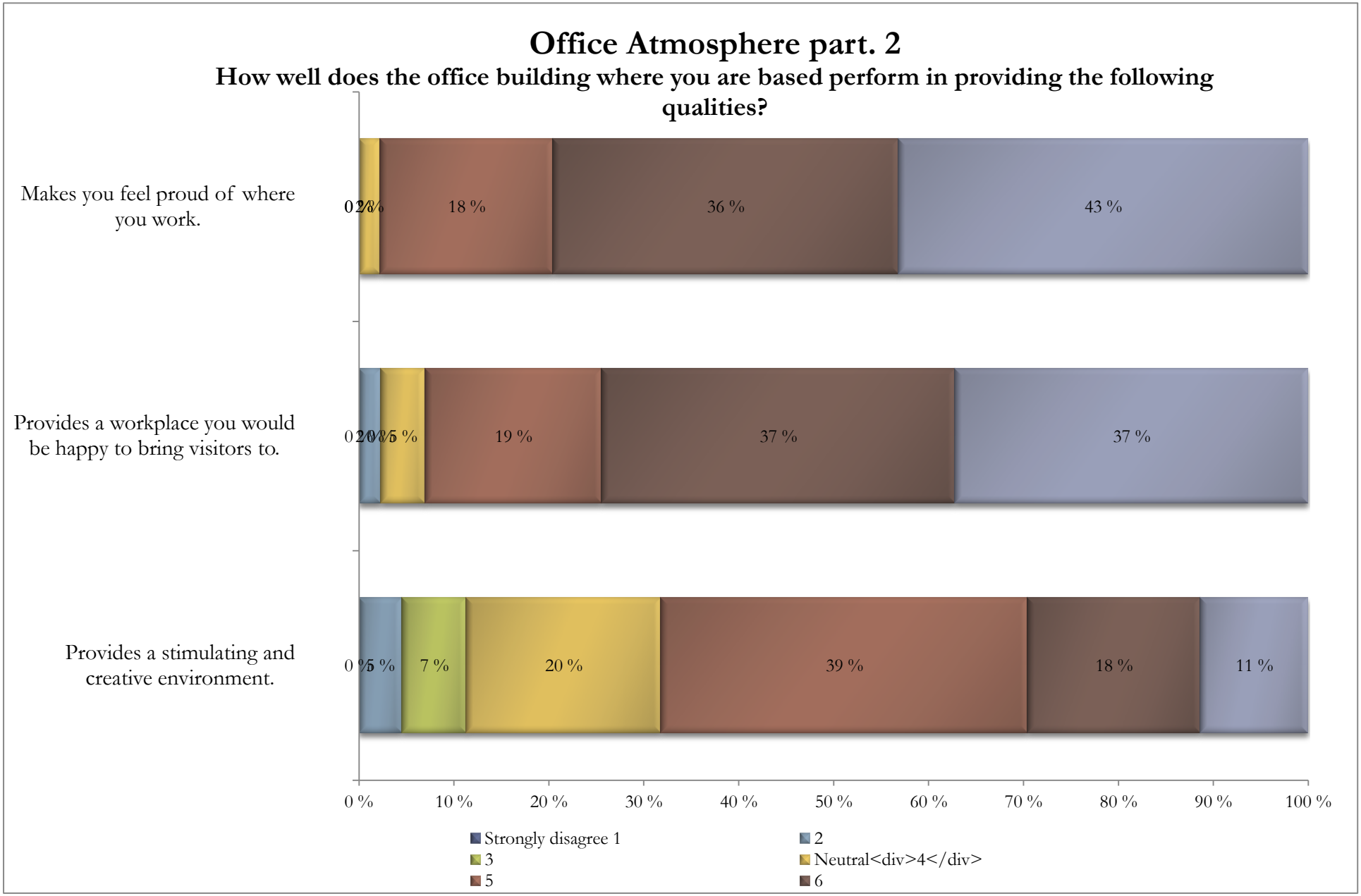

Work Effectiveness
Please indicate to which degree you agree with the following statements
Our office supports effective work.
2 %
11 %
5 %
32 %
34 %
16 %
Our office makes efficient use of the available space.
0 %
7 %
11 %
32 %
32 %
18 %
Our office support project work.
2 %
5 %
14 %
14 %
43 %
23 %
My workspace supports informal cooperation.
2 %
7 %
23 %
39 %
30 %
Our office promotes Telenor's Ways of Work (WoW).
0 %
5 %
11 %
25 %
41 %
18 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4
5
6

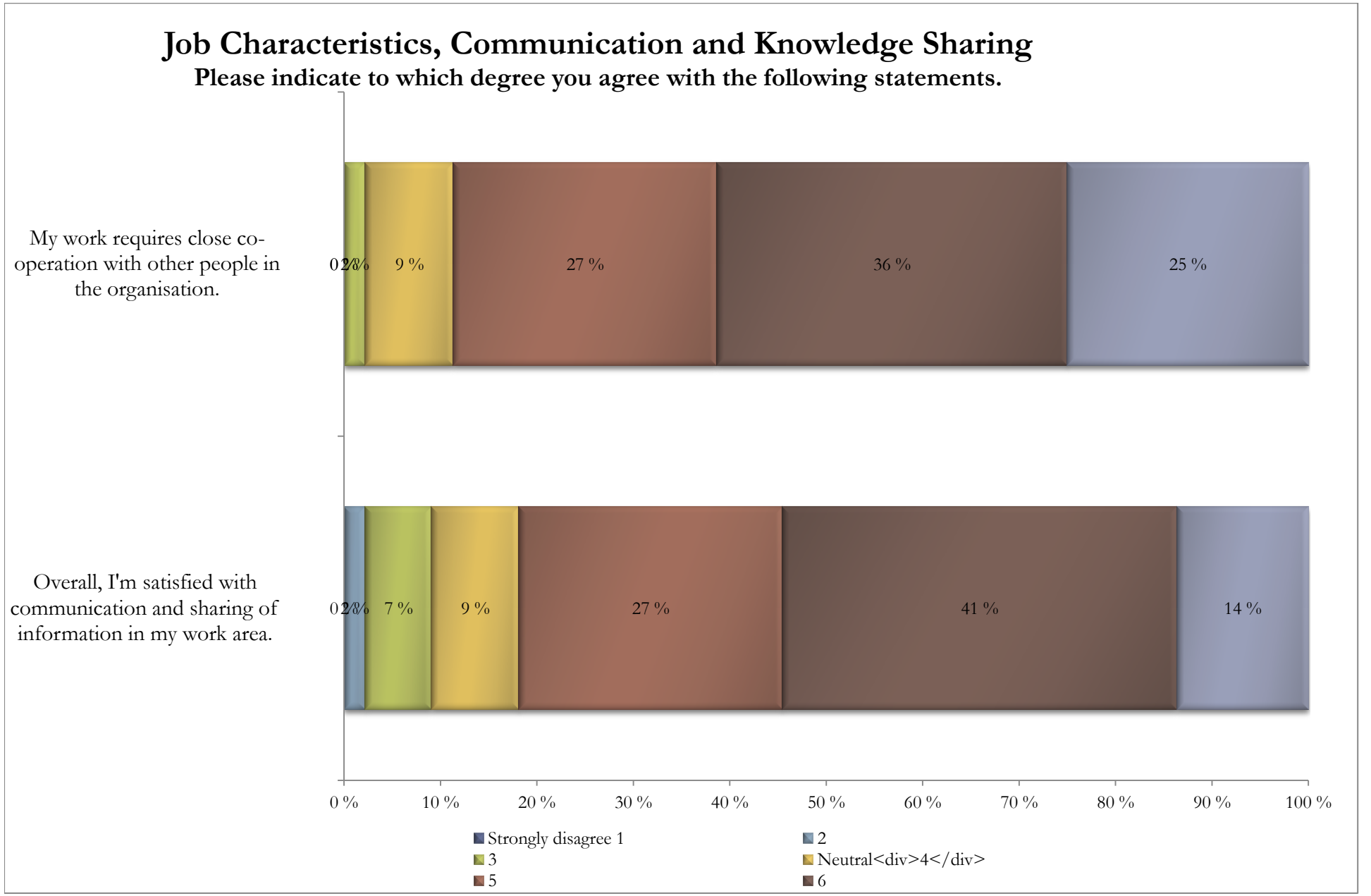

Office Environment part. 1
Please indicate to which degree you are satisfied with the following properties of your workplace.
Aesthetic appearance of the work zone you belong to.
0 %
14 %
23 %
43 %
20 %
0 %
Possibilities for privacy for conversations within the work zone.
16 %
25 %
30 %
7 %
11 %
9 %
2 %
Amount of noise from other people's conversations while you are at a workdesk in the open plan work zone.
0 %
32 %
20 %
18 %
23 %
5 %
2 %
Size of workdesk to accommodate your work.
2 %
5 %
9 %
7 %
34 %
41 %
2 %
The possibility to make phone calls (without disturbing others/or being disturbed by others).
14 %
27 %
16 %
16 %
14 %
7 %
7 %
0 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Very unsatisfactory 1
2
3
Neutral 4
5
6

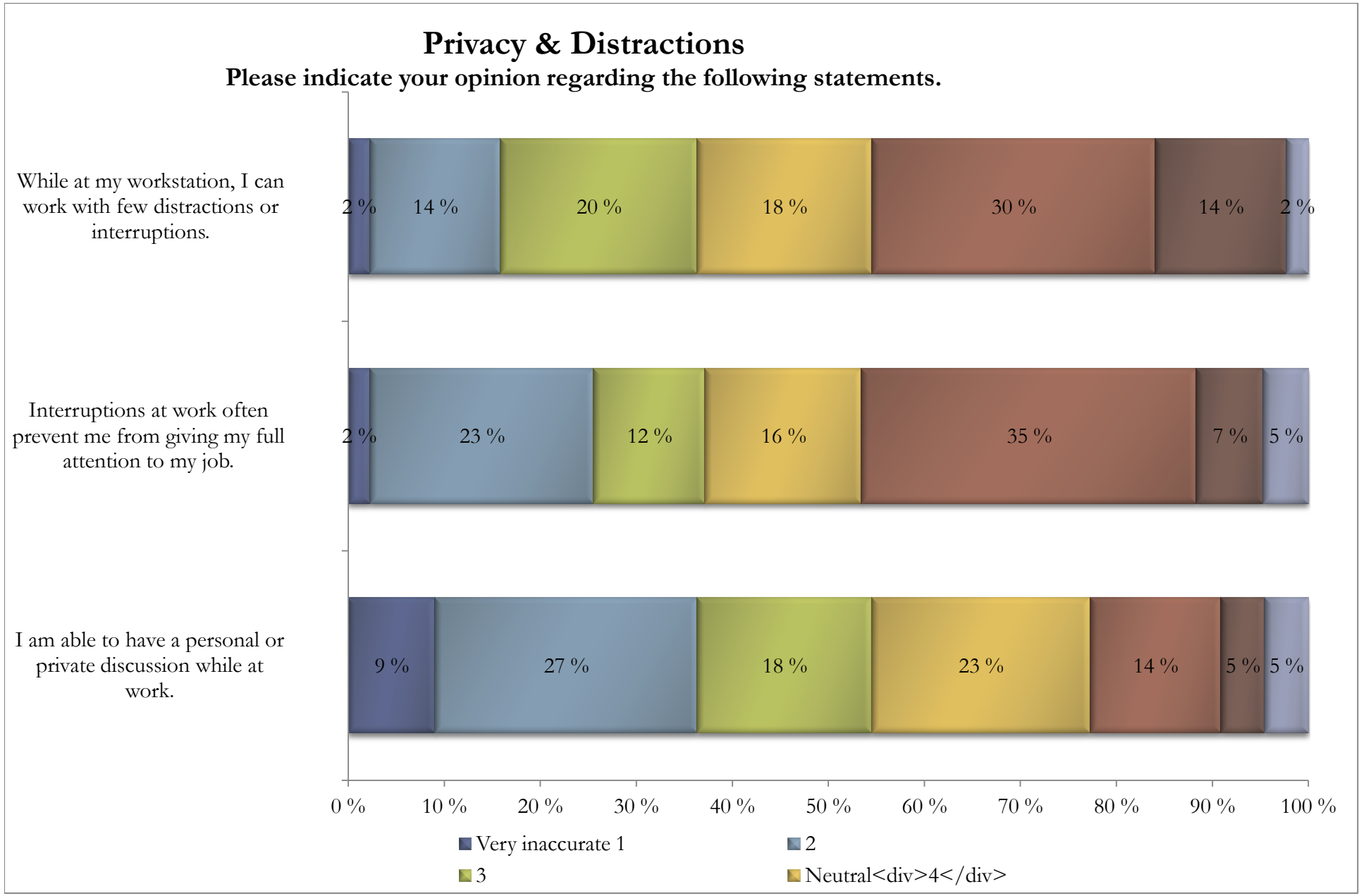

Office Environment part. 2
Please indicate to which degree you are satisfied with the following properties of your workplace.
Amount of background noise (i.e. not speech) you hear at a workdesk in the open plan work zone.
0 % 14 % 14 % 23 % 18 % 20 % 11 % 0 %
Distance between you and other people you work with.
2 % 5 % 2 % 14 % 25 % 39 % 14 % 0 %
Frequency of distractions from other people.
2 % 5 % 14 % 30 % 16 % 27 % 5 % 2 %
Ease of access to supplementary work spaces (meeting rooms, multirooms e.g.).
2 % 5 % 23 % 14 % 23 % 27 % 7 % 0 %
Access to space where you can concentrate.
9 % 18 % 27 % 14 % 14 % 16 % 2 % 0 %
Access to/visibility of management.
0 % 5 % 2 % 16 % 20 % 41 % 16 % 0 %
0 % 10 % 20 % 30 % 40 % 50 % 60 % 70 % 80 % 90 % 100 %
Very unsatisfactory 1
2
3
Neutral 4
5
6

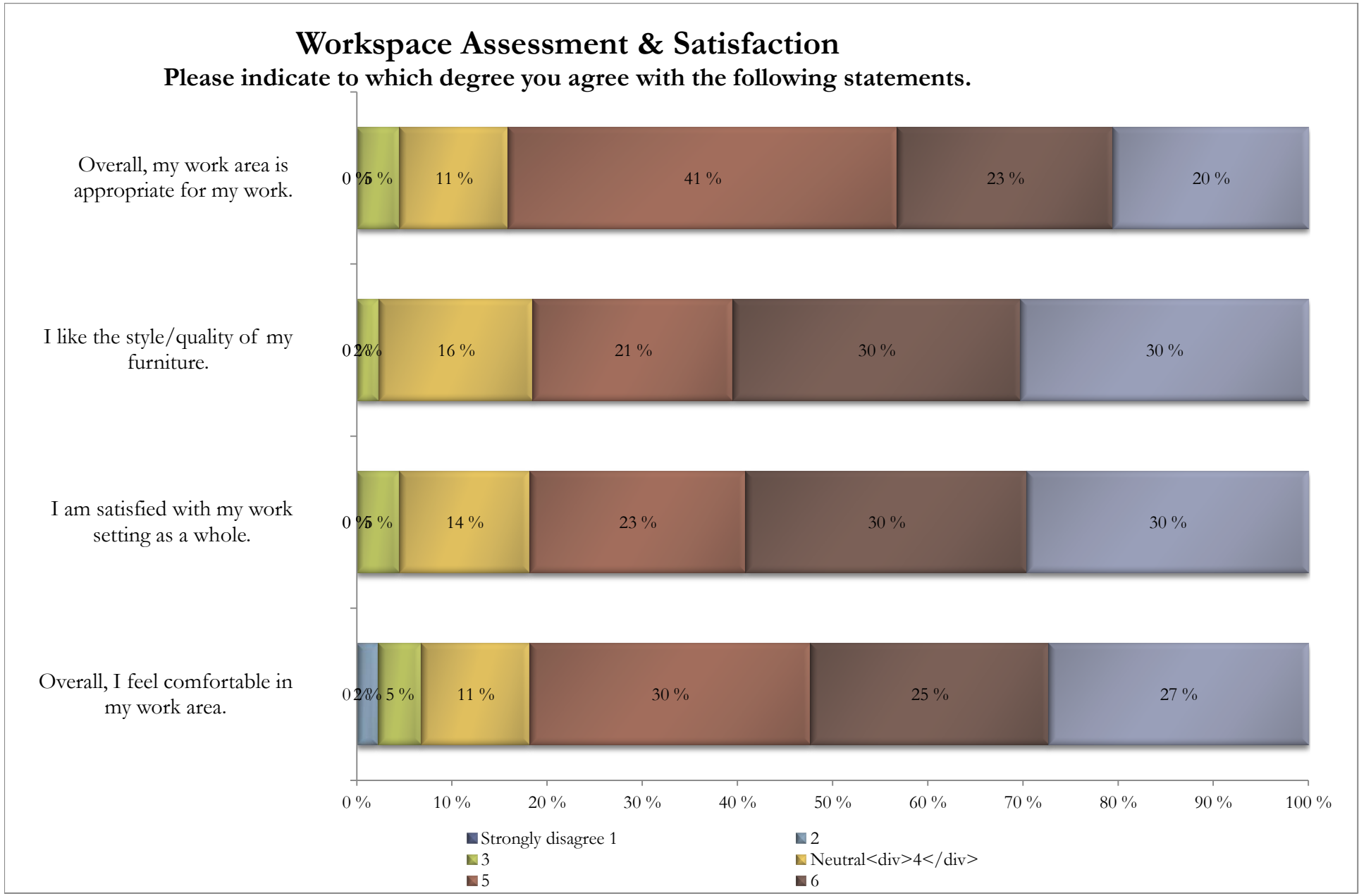

Office Environment part. 3
Please indicate to which degree you are satisfied with the following functions in your workplace.
Conference and meeting facilities.
2 %
14 %
14 %
32 %
30 %
9 %
0 %
Break zones and social space within the work zone.
0 %
7 %
11 %
9 %
23 %
36 %
14 %
0 %
Workplace in open plan work zone.
0 %
5 %
14 %
14 %
25 %
20 %
16 %
7 %
Individual storage spaces.
5 %
9 %
14 %
23 %
20 %
14 %
16 %
0 %
Common storage and filing within the work zone.
5 %
5 %
14 %
25 %
18 %
14 %
11 %
9 %
Printer/copier room ('Service room')
0 %
14 %
25 %
30 %
32 %
0 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Very unsatisfactory 1
2
3
Neutral 4
5
6

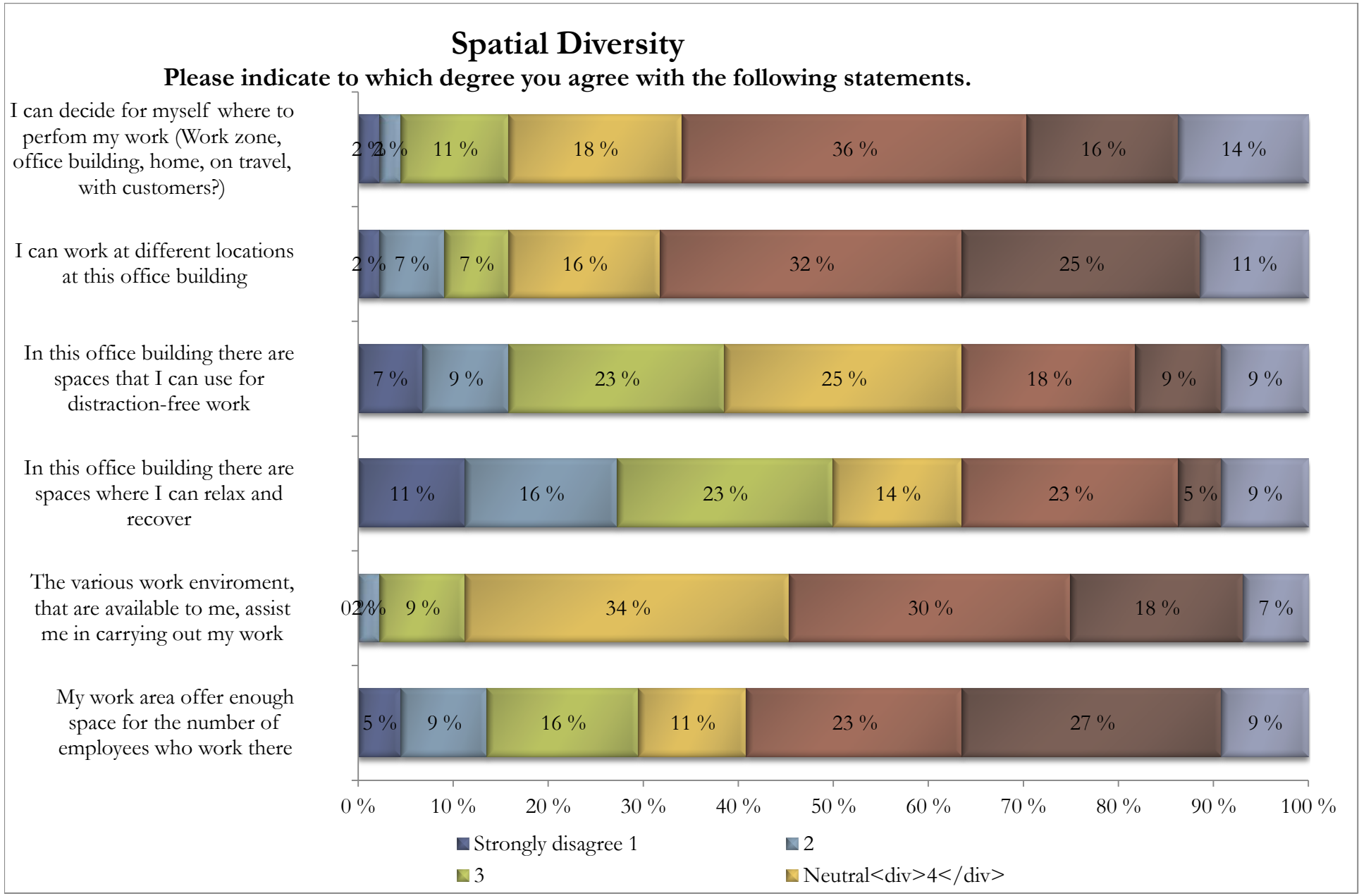

Office Atmosphere part. 1
In Telenor offices, I'm pleased with the following features of office design:
Choice of colours
2 %
11 %
16 %
30 %
20 %
16 %
5 %
Atmosphere, ambience (character of the workplace)
0 %
14 %
20 %
20 %
36 %
9 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4
5
6

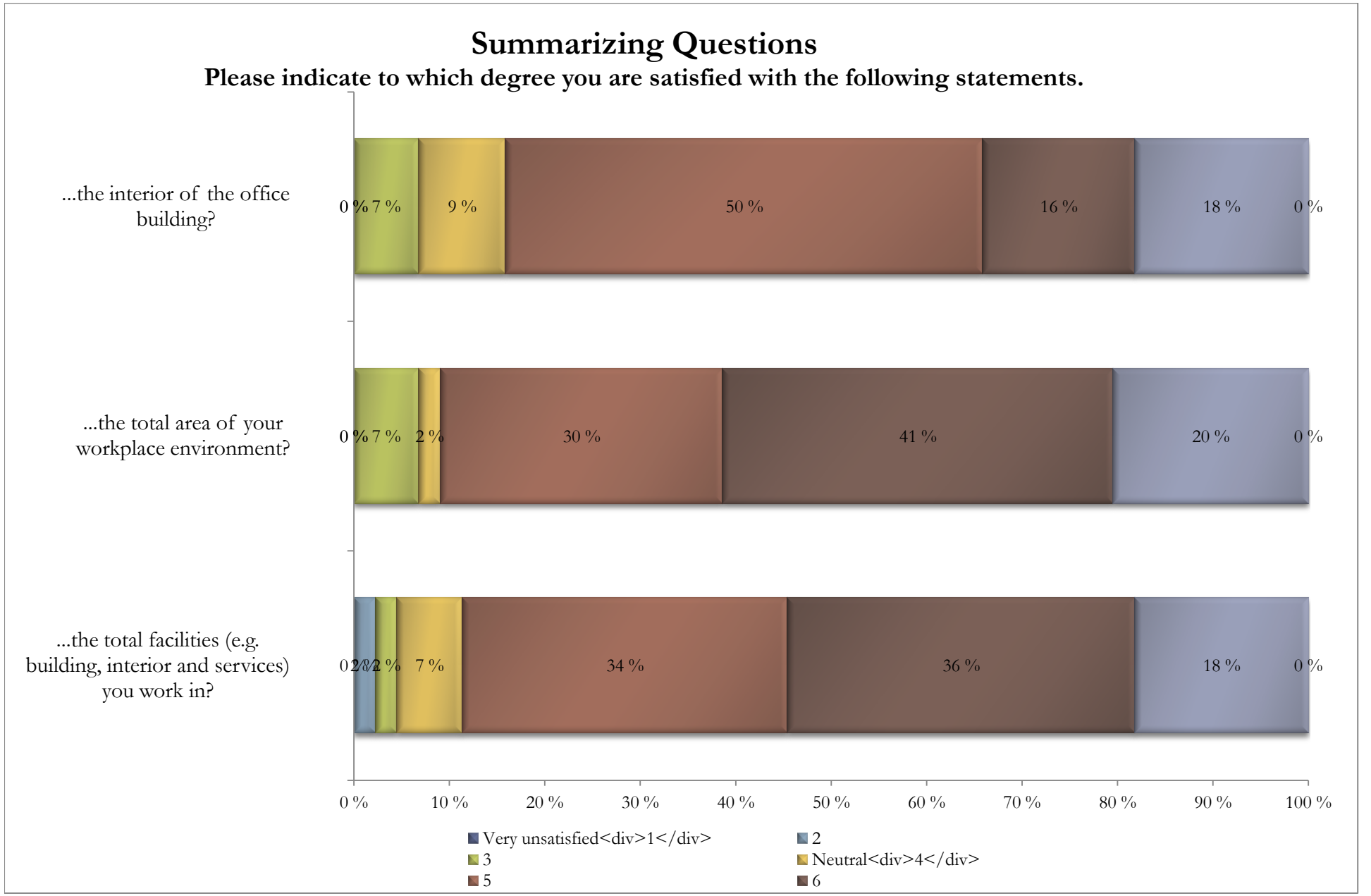

Office Atmosphere part. 2
How well does the office building where you are based perform in providing the following qualities?
Makes you feel proud of where you work.
Provides a workplace you would be happy to bring visitors to.
Provides a stimulating and creative environment.
18 %
36 %
43 %
19 %
37 %
37 %
7 %
20 %
39 %
18 %
11 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4
5
6

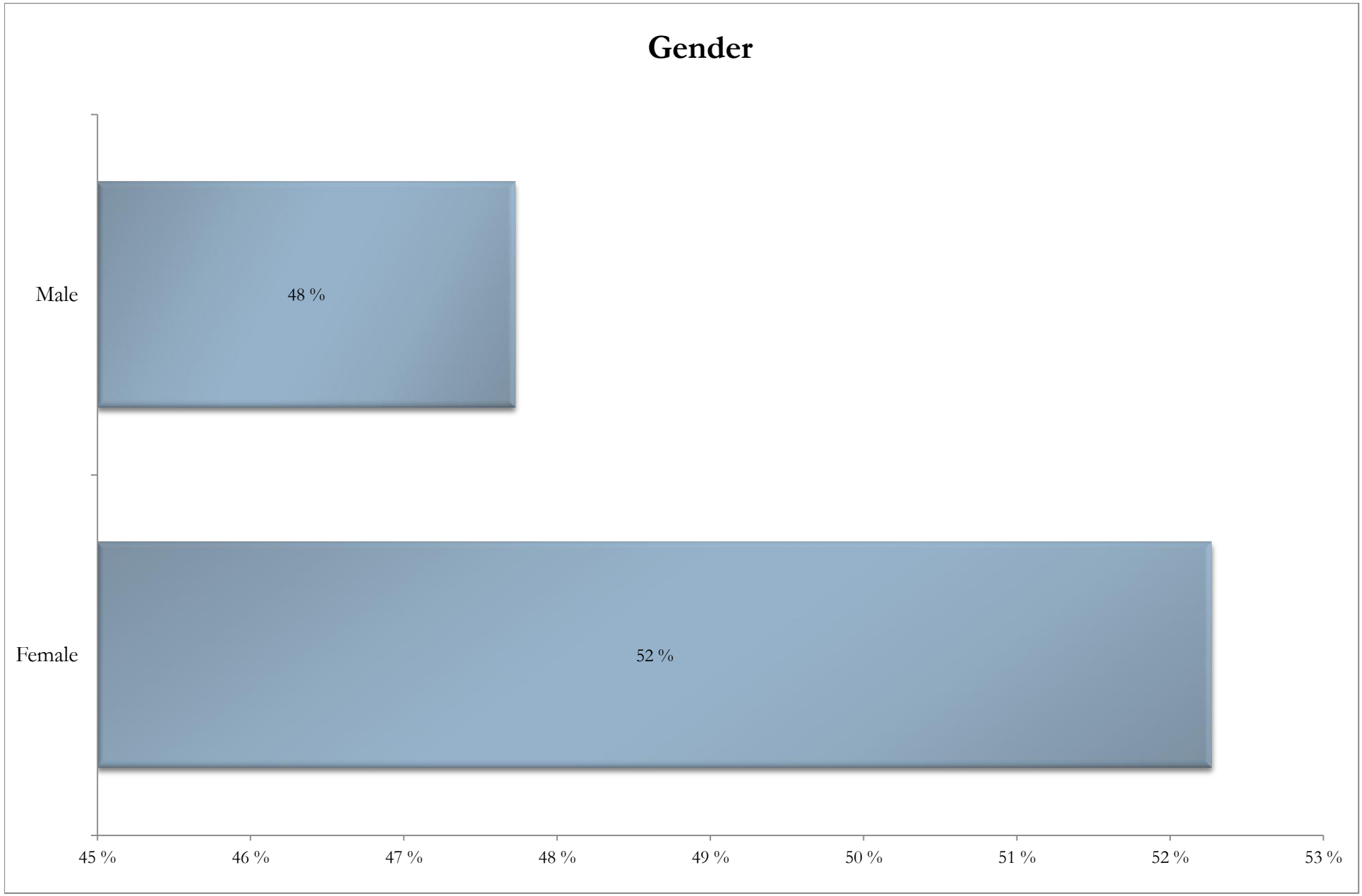

Job Characteristics, Communication and Knowledge Sharing
Please indicate to which degree you agree with the following statements.
My work requires close co-operation with other people in the organisation.
0 %
2 %
9 %
27 %
36 %
25 %
Overall, I'm satisfied with communication and sharing of information in my work area.
0 %
2 %
7 %
9 %
27 %
41 %
14 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4
5
6

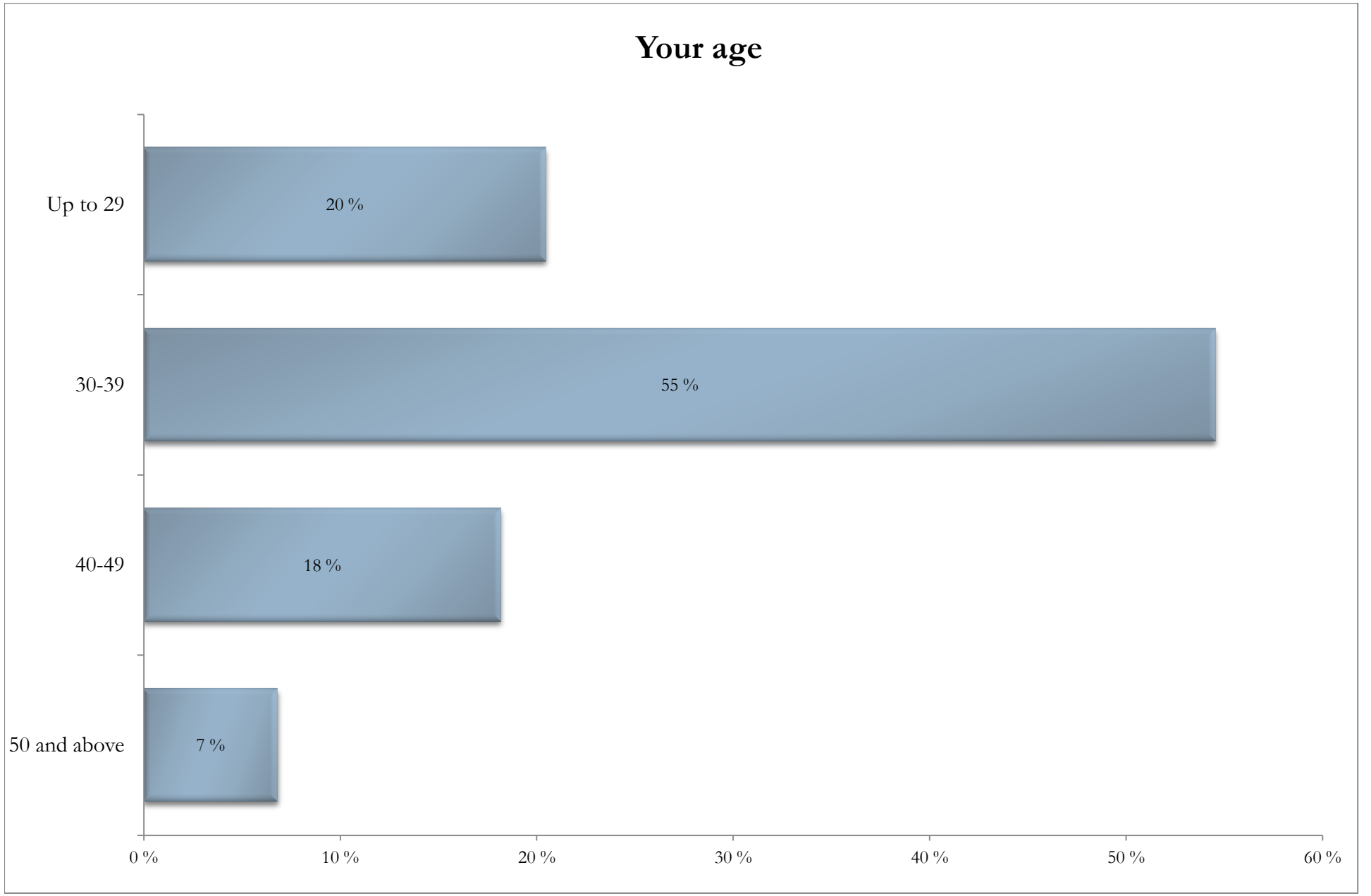

Privacy & Distractions
Please indicate your opinion regarding the following statements.
While at my workstation, I can work with few distractions or interruptions.
2 %
14 %
20 %
18 %
30 %
14 %
2 %
Interruptions at work often prevent me from giving my full attention to my job.
2 %
23 %
12 %
16 %
35 %
7 %
5 %
I am able to have a personal or private discussion while at work.
9 %
27 %
18 %
23 %
14 %
5 %
5 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Very inaccurate 1
2
3
Neutral 4

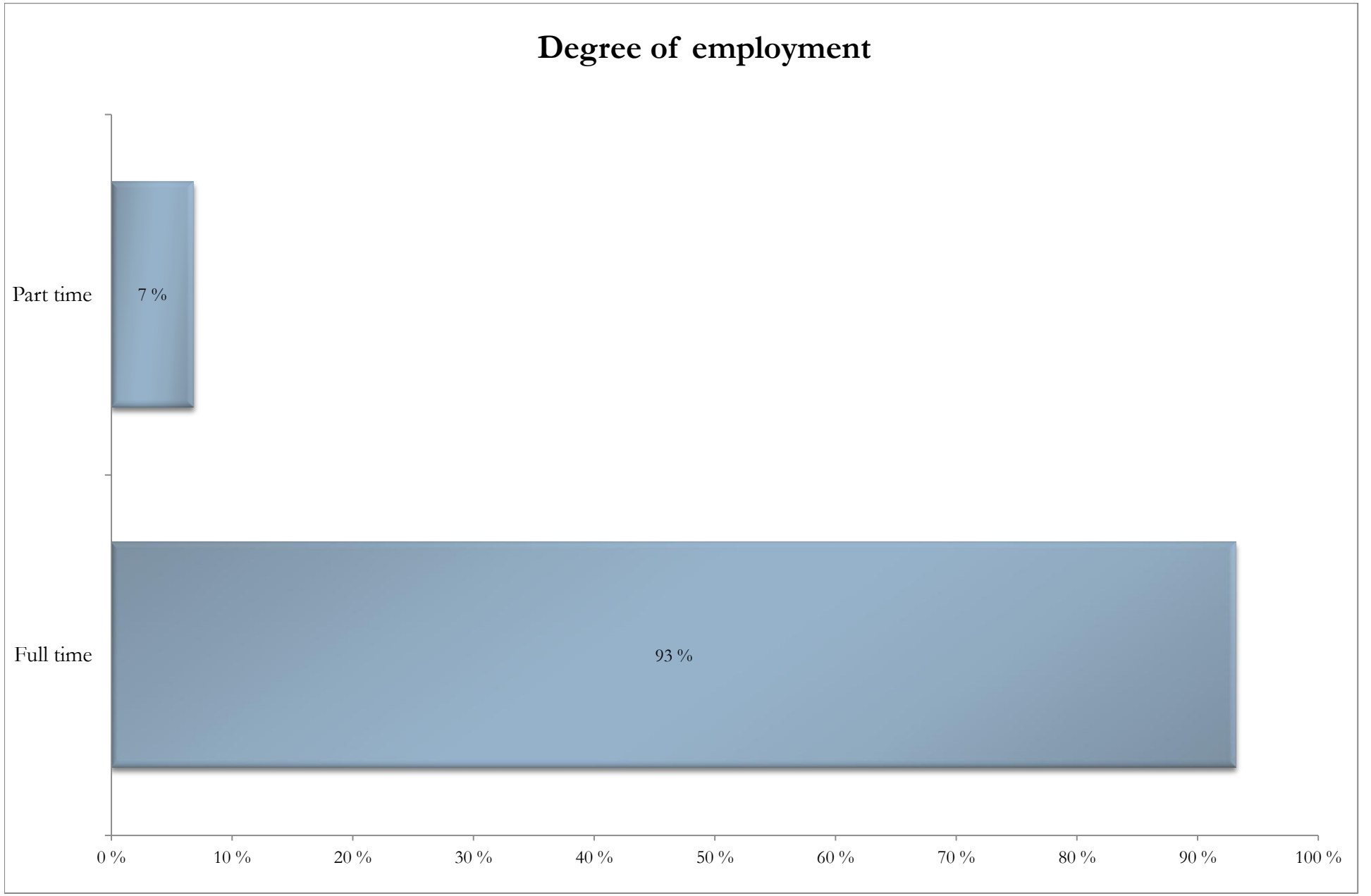

Workspace Assessment & Satisfaction
Please indicate to which degree you agree with the following statements.
Overall, my work area is appropriate for my work.
0 %
5 %
11 %
41 %
23 %
20 %
I like the style/quality of my furniture.
2 %
16 %
21 %
30 %
30 %
I am satisfied with my work setting as a whole.
5 %
14 %
23 %
30 %
30 %
Overall, I feel comfortable in my work area.
2 %
5 %
11 %
30 %
25 %
27 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4
5
6

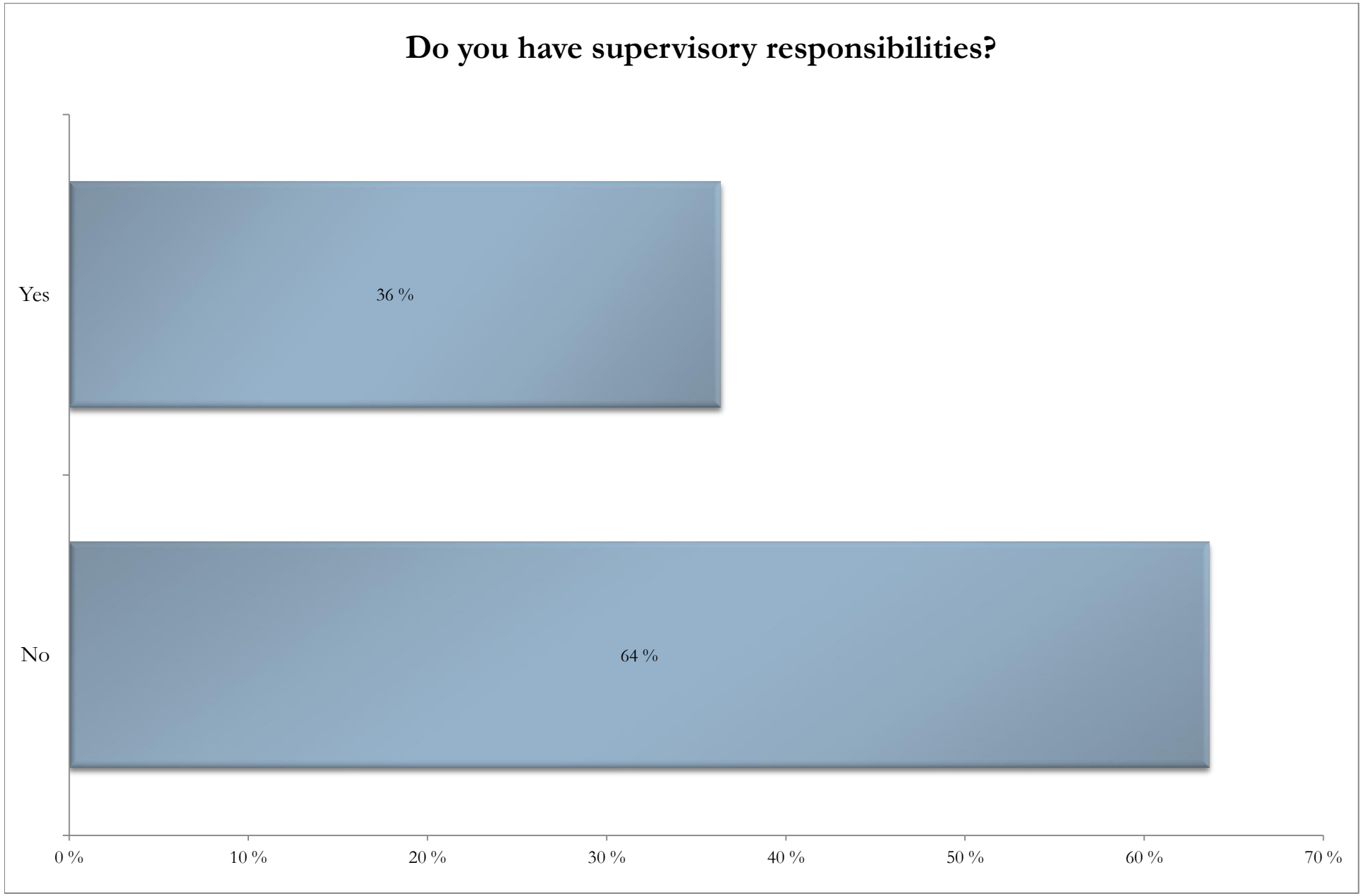

Spatial Diversity
Please indicate to which degree you agree with the following statements.
I can decide for myself where to perfom my work (Work zone, office building, home, on travel, with customers?)
2 %
2 %
11 %
18 %
36 %
16 %
14 %
I can work at different locations at this office building
2 %
7 %
7 %
16 %
32 %
25 %
11 %
In this office building there are spaces that I can use for distraction-free work
7 %
9 %
23 %
25 %
18 %
9 %
9 %
In this office building there are spaces where I can relax and recover
11 %
16 %
23 %
14 %
23 %
5 %
9 %
The various work enviroment, that are available to me, assist me in carrying out my work
0
2 %
9 %
34 %
30 %
18 %
7 %
My work area offer enough space for the number of employees who work there
5 %
9 %
16 %
11 %
23 %
27 %
9 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Strongly disagree 1
2
3
Neutral 4


Summarizing Questions
Please indicate to which degree you are satisfied with the following statements.
...the interior of the office building?
0 % 7 % 9 % 50 % 16 % 18 % 0 %
...the total area of your workplace environment?
0 % 7 % 2 % 30 % 41 % 20 % 0 %
...the total facilities (e.g. building, interior and services) you work in?
0 % 2 % 2 % 7 % 34 % 36 % 18 % 0 %
0 % 10 % 20 % 30 % 40 % 50 % 60 % 70 % 80 % 90 % 100 %
Very unsatisfied 1
2
3
Neutral 4
5
6


Gender
Male
48 %
Female
52 %
45 %
46 %
47 %
48 %
49 %
50 %
51 %
52 %
53 %


Your age
Up to 29
20 %
30-39
55 %
40-49
18 %
50 and above
7 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %


Degree of employment
Part time
7 %
Full time
93 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %


Do you have supervisory responsibilities?
Yes
36 %
No
64 %
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %

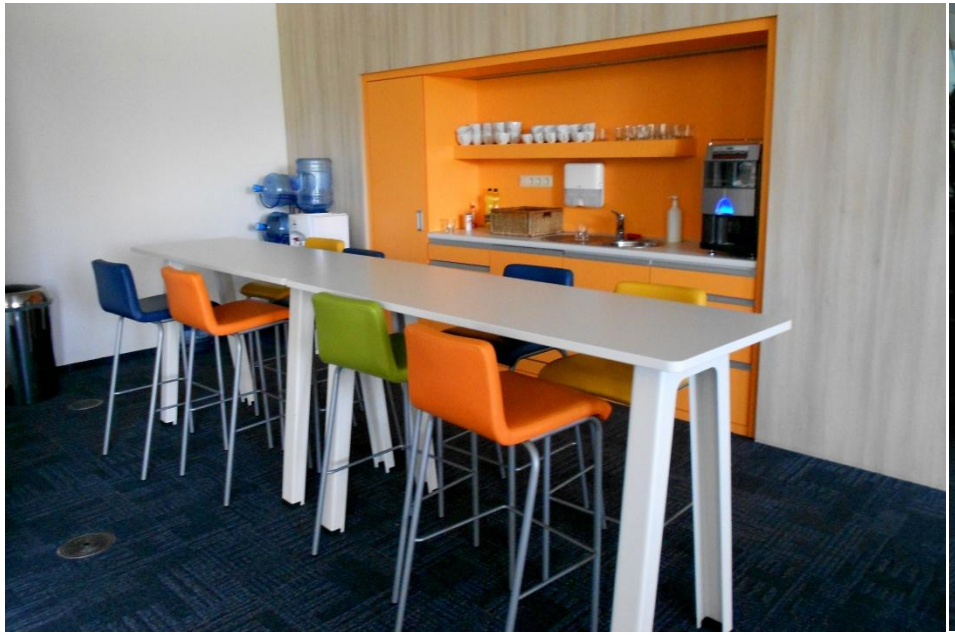
APPENDIX 4 | TELENOR BUDAPEST | WALKTHROUGH SUMMARY | 2012

TELENOR BUDAPEST | WALKTHROUGH SUMMARY

Date: April 26th 2012
Time: 2 x 60 minutes
With: Siri, Trine, Dragana

Walkthrough Group 1 13:00 – 14:30			
Respondent 1:	Advertising Campaign Manager, Marketing Communications	37	Male
Respondent 2	CEO Assistant	39	Female
Respondent 3	Facility Management	53	Female
Respondent 4	Assistant to CFO, Finance division,	30	Female
Walkthrough Group 2 15:00 – 16:30			
Respondent 5	Front Office CSFO, GM,	28	Male
Respondent 6	System and Services, Operation Department, Head of MI		
Respondent 7	FMO		
Respondent 8	FMO/ZSOF?	36	Female
Respondent 9	Technical Department/ DO		

Stop 1 Work Zone: Social Zone & Kitchenette



Picture 1: Kitchenette

Picture 2: Sofa Area

Stop 1Work Zone: Social Zone & Kitchenette

Respondents	Positive	Negative	How do you work here?	Improvements
Group 1				
Respondent 1	Friendly open space Popular for informal get-togethers Good furniture	Coffee machine is rather loud, making conversations impossible during "universal" coffee times	Only for short informal meetings with 1 or 2 colleagues Sofa is comfortable for phone calls	
Respondent 2	Light with welcoming colors User friendly kitchenette – good for ad-hoc meetings while having a beverage Comfortable furniture and modern design	In the summer the temperature is too cold (for my liking)	We tend to use this area for informal, short meetings A good place to run into colleagues while making a hot beverage	
Respondent 3	Sunlight, spacious area Pleasant Coffee, tea, fruit Place for short talks Common breakfast	Some noise Need to work, but gets disturbed	Everyday Spend more than 6 hours out of 8 in the unit: so used for sit downs to have a more strict period in working, short informal meetings	More attention to each other
Respondent 4	Spacious and comfortable. Nice to have it so close to the work station Well equipped	People often use the kitchen to hold meetings which makes noise and disturbs work Cannot be used to make phone calls as it is not separated from the workplace	I don't Sometimes use the kitchen for short meetings or discussions	A less noisy coffee machine

Group 2				
Respondent 5	Best place in the house for socializing Colleagues can freshen up Possible to eat if the restaurant is full and noisy	Social zone is too small for 200 employees in customer service	Short/small meetings in case of disaster	
Respondent 6	Design Coffee machine		For short informal discussion and social networking Unplanned meetings	
Respondent 7	Easy to get coffee		Eat Breakfast	
Respondent 8	Practical Breakfast meetings		Short meeting	
Respondent 9	Very good place for short breaks		Used for short meetings	Want cacao for the coffee machine!!

Discussion stop 1

Group 1

Positive:

- Quick and easy place to access drinks(coffee or tea) and sandwiches (no warm food due to smell)
- The area is well equipped and the furniture are comfortable and modern

Negative:

- There are issues where people chat loudly and social conversations, private and/or work related can be disturbing for others in the work zone.
- Also noise from people's phone calls are considered negative
- The multifunction of the kitchen area, as eating place and meeting place, can be conflicting as people feel like they can't enjoy their meal because people are having a meeting at the same table

How do you work here?

- This is the social zone of the workspace and is often used for informal and/or short meetings
- Used for meetings between sections/units, private and work related conversations
- The sofa area (picture 2) is used for phone calls

Improvements:

Group 2

Positive:

- Most important place in the building and is used a lot
- The furniture is nice

Negative:

- Noise

How do I work here?

- Used for unplanned meetings
- Used for breakfast
- The social zone and kitchenette is used for networking, social talks and short meetings
- Has been used for birthday celebrations, but these had to be moved down to the restaurant as they were too noisy
- The customer service department don't use this area too much as they have a more scheduled agenda where their brakes are limited
- Sofa section (picture 2 is used for phone calls

Improvements:

- Want hot chocolate in the coffee machine

Stop 2 Work Zone: Cubicle

Picture 3: Cubicles

Picture 4: Cubicle Furniture

Stop 2 Work Zone: Cubicle

Respondents	Positive	Negative	How do you work here?	Improvements
Group 1				
Respondent 1	Close to work desk Does not have to be booked, unlike meeting rooms	Cubicle's walls are not closed/covered in the upper part, so people in the other cubicles or in the service hub can hear what you are talking about	Just short meetings or calls which are not sensitive in any way	To isolate
Respondent 2	Nice design	Not user friendly Amplifies sounds and voices Too transparent for people working in the units	Rarely use it as it is too transparent and amplifies sound	Should come up with alternatives on how to make them more sound proof and less visible
Respondent 3	Ok for meetings for 2-3 people	Noise: no sound protection. No possibilities for long discussions	Some short discussion, but not possible to work there for the whole day	Sound protection to be solved. Working desk!
Respondent 4	Good alternative for a further-away meeting room	Not sound-proof No equipment No plug-in for lap-tops	Short meetings that don't require special equipment (projector, etc.) It's less used than what I think it was meant for	Sound proof! Plug-in for lap-tops.
Group 2				
Respondent 5	All group meetings are placed here!! Covered Restrooms Boxing bag and Table Soccer is cool	Not enough fresh air; no air left after 30 minutes	Group Meetings and Coaching	Projector and Screen Manually regulated lighting instead of sensor lights

Respondent 6	Place for small group meetings	Not covered; not possible to make a confidential conversation Uncomfortable chairs	Face to face discussions. As a "normal" workplace when all others are occupied	Cover the cubicle/roof
Respondent 7	Good place for unplanned meetings	Noisy and you hear everything from outside the cubicle	Short meetings	Reduce outgoing noise
Respondent 8	Design	Not covered Not a silent room	Almost never worked there. Not even for short talks	Cover
Respondent 9	It is good for short meetings	Acoustic problems	Do not work there	

Discussion stop 2

Group 1

Positive:

- The cubicles are a good alternative for the meeting rooms, as they are close to the workplace and available
- The design is nice

Negative:

- Most important; not sound proof as the walls do not reach the ceiling; sound is actually amplified
- The cubicles are not private; they are actually more like an exhibition area where you feel like you are on display
- The design is not user friendly

How do I work here?

- The cubicles are only used for very short meetings where you do not need any special equipment
- They might also be used if there is a lack of work stations in the work zone
- They are definitely less used than they were meant to be

Improvements:

- It is hard to book meeting rooms in this building, so it would be nice to have the opportunity to have meetings within the work zone; this would require more equipment in the cubicles and making it sound proof

Group 2

Positive:

- The respondents say that they like the design and that the cubicles are transparent

Negative:

- The issue of noise is once again mentioned, and it is clear that this is the same issue all over the building as they cubicles are not closed spaces (do not have a roof)

How do I work here?

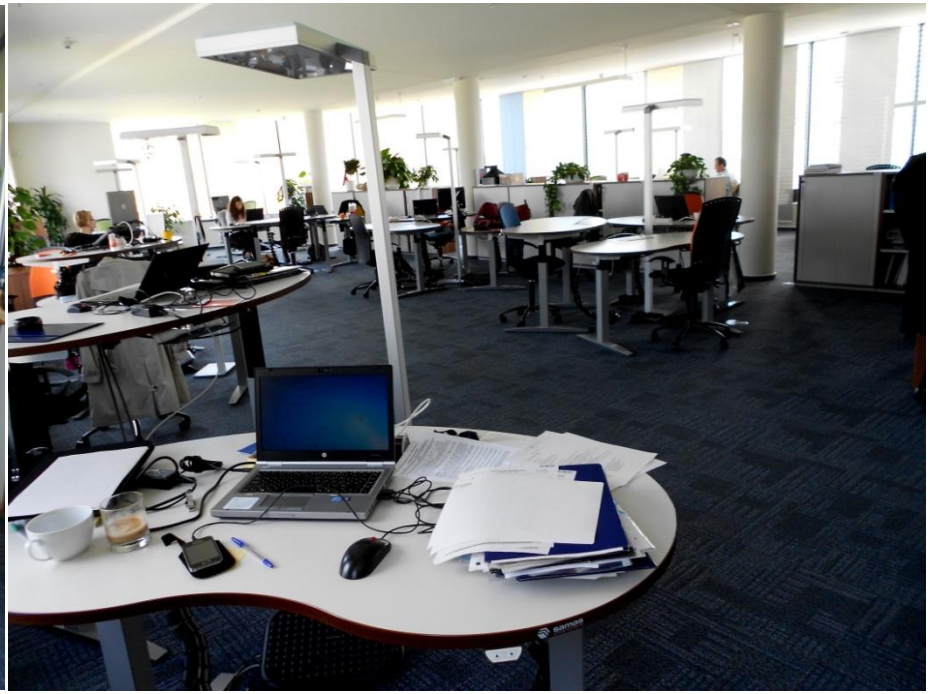
- Some people like to work in the cubicle, as a substitute workstation when everything else is occupied
- They are also used for unplanned meetings

Improvements:

- The customer Service department mentions that they need a projector in their cubicles because they use them for coaching
- The cubicles should be made sound proof so that they will be more suitable for longer and more private conversations

Stop 3 Work Zone: Open Plan Work Zone

Picture 5: Open Plan Workplace seen from the far edge



Picture 6: Open Plan Workplace seen from entrance/social zone

Stop 3 Work Zone: Open Plan Work Zone

Respondents	Positive	Negative	How do you work here?	Improvements
GROUP 1				
Respondent 1	Open space makes cooperation better Furniture is excellent (adjustable table) Desk sharing/rotation of work desks helps variety	Number of tables, table distribution is uneven across units Lack of colorful decorations Not inspiring, rather boring space	Main workplace, long hours at one place. Use height adjustable table often Favorite desk used for months	More flowers/decorations Better work place/desk distribution
Respondent 2	**Desks:** Comfortable Right size and adjustable height No corners or sharp edges to bump into and get hurt. Clean desk policy **Work Zone:** Light, natural daylight Ergonomically chairs	LAN cables are unstable – loose network connections	Only using notebook without a keyboard and monitor	Temperature adjustments

Respondent 3	No need to request informal meetings as you can see everyone in the unit at all times and just walk to them. Adjustable desks for people of all heights. Clean desk is not only positive for desk sharing, but for a tidy office. Possible to sit together with whom you work with	Noise As a leader you are always reachable and there is no way to hide when you are very busy or tired etc		
Respondent 4	People are free to sit wherever they wish to, which is good for team building and communication. Comfortable tables Wi-Fi is available everywhere	"Unequal treatment": not all units have the same amount of work places; therefore some units are really crowded with less air and space No confidential phone calls can be made in the unit Windows can't be opened. Window blinds function is unpredictable	Free seating Clean desk policy	More air please
GROUP 2				
Respondent 5	Comfortable furniture and good layout	Too few work stations (chairs and desks)		More work stations
Respondent 6	Tables with flexible highness. Big windows. Comfortable chairs. Possibility to sit anywhere No dedicated places	Too small boxes for private stuff. Sometimes overcrowded, no place to sit in my own unit Noisy Sun reflection	Flexible places; sit close to colleagues based on process or project	More window shades

Respondent 7	Inspiring surroundings Easy to cooperate	No place to make confidential phone calls	Daily work	
Respondent 8	Spacious and well furnished. Modern technical equipment Close to nature: panorama fantastic I learn a lot from colleagues Desk is perfect!	No private zone Noisy	I always sit on the same desk, though we are in a different little office from the whole unit, but I clean my desk every day	More shading for windows Zone for privacy
Respondent 9	Sunshine Close to colleagues	Noise	Daily; most of my working time I sit in my unit	Window shades/curtains

Discussion stop 3

Group 1

Positive:

- The daylight in every part of the work zone is appreciated
- The clean desk policy results in a more tidy workplace
- The rounded "no sharp edges" design on the furniture is appreciated and the possibility to adjust the height of the tables so that you can either work sitting down or standing up is valued as positive

Negative:

- The respondents mention lack of oxygen even though it has been measured with technical equipment to be sufficient. It is more an issue of employees wanting to open windows and feel the fresh air and be closer to nature
    - It has been proven and demonstrated for the employees that if the windows are opened, the fresh air from the indoor climate system will simply flow out and no fresh air will flow back in
- Some of the female employees states that they often feel that the temperature is too cold, and sometimes it is more noisy than it should be
- Management feels that being reachable at all times may result in one too many interruptions and disturbances
- Some work stations in the work zone is more traficated than others, especially if you are seated close to the social zones
- Some of the cables and/or plug boxes for Internet is unstable so the employees looses network connection at times

How do I work here?

- Even though the clean desk policy is applied and mostly followed, many employees have preferred work stations where they sit every day if available.
- Others have a few different favorite work stations and alter between these

Improvements:

- Employees want to be able to open the windows and have more control over the temperature

Group 2

Positive:

- The flexibility of the open plan work zone is mentioned as positive, although most employees have a preferred to place they like to sit

Negative:

- One of the respondents say that he does not like the open plan in general as it is too noisy
- Since everyone have their preferred seats, co-workers feel uncomfortable choosing different work stations each day in case they "take" someone else's desk

How do I work here?

- Employees makes work related phone calls inside the work zone and private ones outside the work zone as there is no place to go in the open plan space that is sound proof
- Since it is a clean desk policy in the workplace, no personal items are left on the work stations
- In customer service they also use desk sharing, but they have fixed groups that shares each area
- It is also ok to work from home if you need to concentrate

Improvements:

- More window shades for the work zone as the current ones only cover 1/3 of the actual window surface

Stop 4 Atrium

Picture 7: Atrium seen from above

Picture 8: Atrium with table soccer

Stop 4 Atrium

Respondents	Positive	Negative	How do you work here?	Improvements
GROUP 1				
Respondent 1	Huge open space with panorama	Lack of decorations	I usually go out from the unit to make calls May sound funny, but it is good for sensitive calls because of the constant background noise	More colors Comfortable furniture
Respondent 2	Light, transparent and supports communication by allowing people to meet and talk. Staircase is frequently used to meet and talk. Good for holding events	Not war: lacks soul and warm materials. (e.g. wood, fabric, colors)	As an assistant, run around a lot and meet colleagues, exchange info and ideas	More colors and sound
Respondent 3	Bright, feeling of free space, cleanliness and "belonging together" Meet everyone	Nothing negative.		Colors Extra sitting areas with lounges and sofas
Respondent 4	Very spacious Very well lighted Table soccer is very popular Ideal for events for the whole company	Too little furniture	People use it to play table soccer with colleagues Others make phone calls here Sometimes other companies come here to have promotions (like coffee promotions, or banks etc.)	Maybe some more furniture

GROUP 2				
Respondent 5	Good place for events: Town Hall meetings Perfect if one needs to have a disciplinary conversation with a colleague	No shading; so too hot in the summer	Face to face meetings if we do not want other colleagues to overhear what we are discussing	More places to sit
Respondent 6	Open: quite big area. Transparency Table soccer. Big window toward nature.	Acoustics Climate in summer. Table soccer is too loud for expo meeting rooms in atrium	Very short discussion on the way between meeting places	More type of "table" games for social networking Plants
Respondent 7	Table Soccer Light and sunny You can see the entire building	No colors	Extra fast meetings when you bump into people in the staircase. Networking	More Colors
Respondent 8	Heart of the building Large and sunny	Not "cozy" enough Acoustics are terrible	I use this area rarely for meetings, but excellent for informal networking	More colors. More furniture for working places
Respondent 9	Dimension Light Huge windows		Only a few discussions	

Discussion stop 4

Group 1

Positive:

- Respondents like that it is possible to "play around" in the atrium (e.g. table soccer, lego)
- They like that the space is open and transparent
- Nice that the staircase is in the middle

Negative:

- The atrium is too sterile and specially unfriendly in the winter time when it is all grey both on the inside and outside of the building

How do I work here?

- Sofas in the atrium can be used for phone calls and is seen as the best place for private phone calls because of the constant background noise making it hard for others to overhear
- Atrium is used as a meeting place for networking and "chit-chat"

Improvements:

- Needs more colors and comfortable furniture

Group 2

Positive:

- The atrium is light and sunny and is a large place where people usually meet
- It is well suited to have negative conversations with employees in case of unpleasant reaction
- Christmas-, and summer parties are arranged here; a place to bring customers and partners

Negative:

- No colors
- The climate in the summer makes it too hot, and there are no shades for the windows in case of bright sunlight
- The recycled air from the work units are used in this area

How do I work here?

- The atrium is a typical place to meet for short discussions, and it brings people together in general
- The sofas in this area are used for short sit down meetings and talks

Improvements:

- The atrium needs more colors and more furniture to make it possible to sit down and maybe also work here
- Desks for lap tops are desirable and also more "games" for social activities

Stop 5 Atrium: Coffee Shop

Photo 9: Atrium Coffee Shop

Photo 10: Atrium with coffee shop

Stop 5 Atrium: Coffee Shop

Respondents	Positive	Negative	How do you work here?	Improvements
GROUP 1				
Respondent 1	Furniture and atmosphere Very friendly space for short brakes		No work, just socializing or short informal meetings while queuing or drinking coffee Important space for interpersonal relations	
Respondent 2	Availability to grab something to eat quickly. Meeting point for internal or external	Old-fashioned food, not following trends of café's. Poor food selection	Ad-hoc meetings	
Respondent 3	Possible to work		To have coffee Short meetings with one or two colleagues	Colors and extra seats, lounges and sofas
Respondent 4	Good meeting point In the middle of the building (good location)	Quite expensive and not a wide range of goods to be bought	Informal meetings can be held here	More supply with reasonable prices
GROUP 2				
Respondent 5	This is an island in the "multi-world" Better coffee than in the unit kitchenette	Very often full (over crowded) – not able to find a place to sit Too long line-up/queue	Meetings with head of directors (sometimes)	One more pouring station Internet Corner TV

Respondent 6	That it is in the building Corner with small tables	Too much sun in summer	Informal meetings or discussions. Social networking Meeting with partners We use it quite often for work as a meeting place	Window shades
Respondent 7	Good place for longer informal meetings	Sometimes very noisy	Meetings that does not require a meeting room	Permanent TV
Respondent 8	Absolute favorite for informal and formal meetings Furniture outside shop is perfect (green cover)	Inside furniture is not practical.	I use this regularly, and not only for drinking coffee	Change of inside furniture (to standing bar) Furniture TV inside for commercial and TV show
Respondent 9	Possibilities of getting a sandwich etc.	Some times the number of tables and chairs are not enough	Only meetings without lap top	Window shades(curtains) TV

Discussion stop 5

Group 1

Positive:

- The most social place in the building: "the facebook of the company"

Negative:

- The bakery products are not good
- Not a good selection of food

How do I work here?

- Used for small meetings, also internal ones

Improvements:

- As the furniture in the "inside" area of the coffee shop is uncomfortable and dull, it would be nice to have some more friendly and comfortable furniture like sofas etc.
- Better food and beverage selections

Group 2

Positive:

- A "must have" in this building as there are no nearby coffee shops in this area
- The furniture "outside" the coffee shop is nice and better than the ones on the "inside"

Negative:

- Some respondents mention that they are not necessary proud to bring visitors to this coffee shop as it lacks food and beverage selections, but it is the only alternative
- Very crowded in the mornings and after lunch

How do I work here?

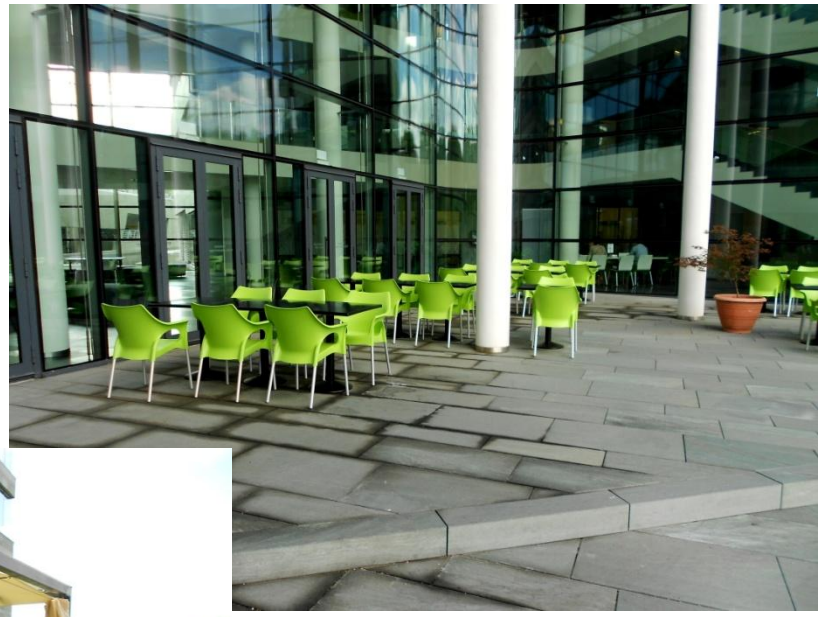
- Customer service does not use the coffee shop much, as it is too far away from their unit for their short and scheduled breaks.
- Used as a meeting place and it is also possible to bring the lap-top for short meetings

Improvements:

- During important events a TV is often placed in this coffee shop and the employees would like this to be a permanent installment
- Better furniture for the "inside" area is desired

Step 6 Restaurant and Outside Table Area

Picture 11: Restaurant



Picture 12: Outside Table Area

Picture 13: Outside Pavilion

Stop 6: Restaurant, Outside Tables

Respondents	Positive	Negative	How do you work here?	Improvements
GROUP 1				
Respondent 1	-	-	-	-
Respondent 2	-	-	-	-
Respondent 3	-	-	-	-
Respondent 4	-	-	-	-
GROUP 2				
Respondent 5	Wide Place Furnishing is ok	No separation Too noisy	Group Meetings in the outdoor sitting areas	More covered seats
Respondent 6	Possible for less official meetings in a less official way Possibility for networking Environment Terrace	Tables moved together by employees become too large, which cause less place, because no space for walking. Too long queue	Chit-chat and less formal meetings	
Respondent 7	Good place for informal meetings	Not enough places in winter time as the outdoor are is closed	Short meetings Eating lunch	
Respondent 8	Enough place: transparency; light Outside workplace is cozy: friendly	Not very comfortable seats for work and long meetings Restaurant can be loud during breakfast/lunch	We sometime have short meetings if we can't find meeting room	
Respondent 9	Generally enough place for lunch Good for meetings	In winter time it is a little bit small as the outdoor area is closed	Only for short meetings	One more basin to wash stuff after bringing your own food

Discussion stop 6

Group 1

Positive:

- Possible to sit outside for breakfast or lunch when the weather is good

Negative:

- Very packed

How do I work here?

- The restaurant is well used
- Lunch often last for about 40 minutes and people often eat in groups
- The outside pavilion area (picture 13) is also often used for meetings

Improvements:

- There should be more colors and materials added to the restaurant as well

Group 2

Positive:

- The employees like the environment in the restaurant and outdoor sitting area and thinks that it is nice that it is so close to the work zones.
- There is usually free tables in the restaurant and many prefer the tables close to the windows
- Some like that the space is not separated
- There is a separate sitting area in the restaurant dedicated to employees working in customer service as they only have a 30 minute break, this way they will always have a place to sit and does not have to line up

Negative:

- The restaurant can be too loud as the space is not separated into sections
- People usually move tables together and this makes less room for walking as they block the space

How do I work here?

- The restaurant and outdoor areas are often used for group meetings when large groups of around 20 are to meet
- These areas can be used as a different way for colleagues to me meet and network, and is used every day especially for lunch

Improvements:

- One more basin to clean dishes after bringing their own food as this area can be crowded

NTNU Real Estate Development and Facilities Management

Focus Group Guide

Focus Group with Respondents from Survey on Workplace Quality

Performed by Trine Eide Schjølberg

2012

Focus Group Guide

Questions for discussion

This interview guide was used during the focus group performed at Telenor Budapest with some of the respondents from the Survey on Workplace Quality

Reasons for Participating in the Survey

1. What was the main reason for you to either participate in the survey or not?
2. What would make you motivated to participate in the survey?

Imagine that they were making improvements in your building/workplace and they asked for employees' opinions, comments and suggestions….

3. Would you feel that it was important to participate in the survey in order to get your opinion, comments and suggestions heard?
4. Would you expect your opinion, comment and suggestions to be taken into consideration in case of a reconstruction of your work zone?
5. How do you think you could best explain your perception of the workplace?
    a. By Participating in the Survey?
    b. By participating in a Walkthrough?
    c. By participating in a Focus Group?

The Survey Design

6. In general, how was the length of the survey?
7. How long did it take you to fill it out?
8. Did you like the way the survey was divided into section based on themes?

What is Your Opinion on the Questions?

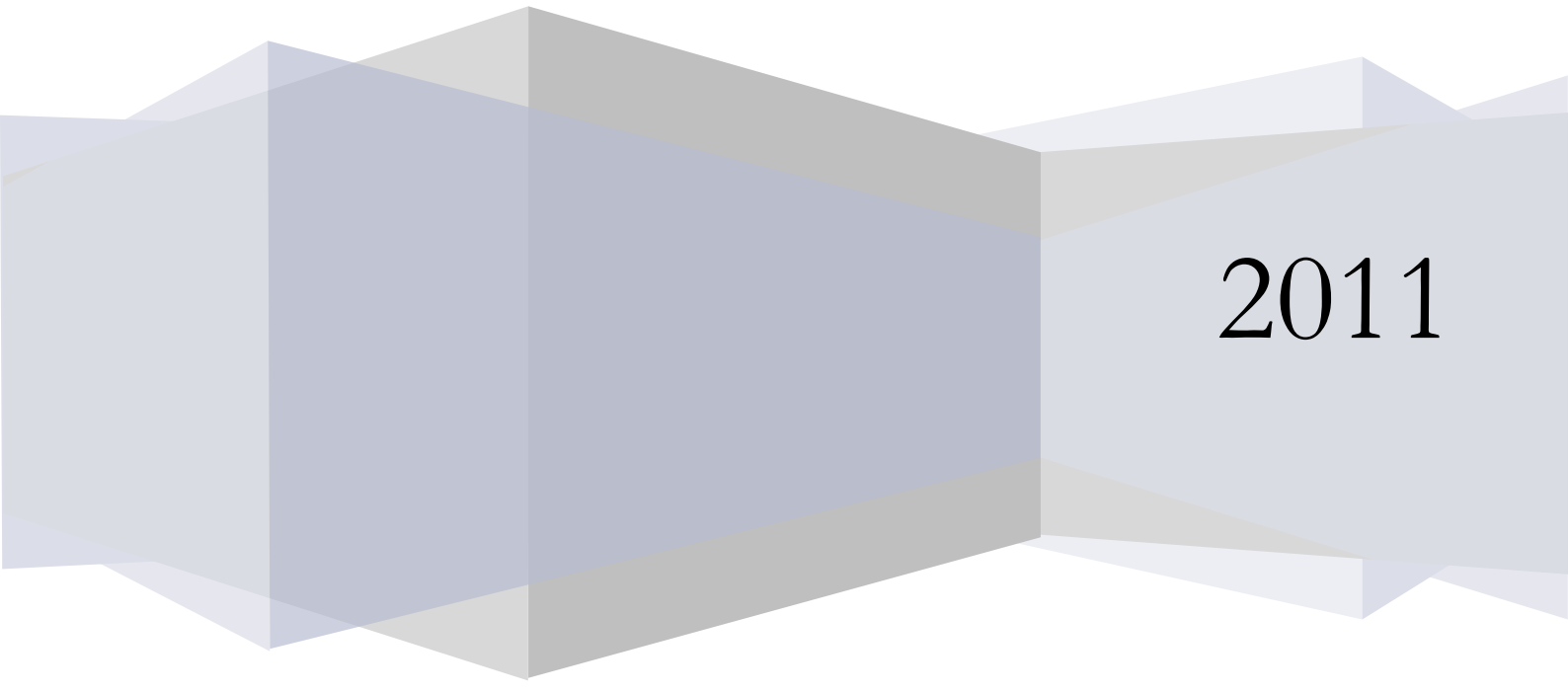
9. Were the questions easy to understand?
10. Were the questions easy to answer?
11. How about the language? Understandable to most in English? … or should it be presented in the native language of the respondents?
12. In order to better understand your workplace, is there any questions you felt were missing? Some facilities not mentioned that you wanted to comments on? Or did the open questions cover this?

NTNU Real Estate Development and Facilities Management

Expert Interview Guide

Expert Interviews with key persons

Performed by Trine Eide Schjølberg



2011

Interview Guide

Questions for discussion

This interview guide includes the main questions used for all the expert interviews conducted in this study. The guide has served as a template for each interview, but has also been altered and adapted to fit each of the interviewees as they have different experience.

The purpose of the evaluation

1. Why is it important to do an evaluation before and after the reconstruction of a work zone?
2. What do we need to know about the use of the work space in order to further develop the office design?
3. How will the information be used and presented?

Administration of the Survey

4. How should the survey be administered?
5. What kind of analysis is it desirable to perform with the results?
6. How important is it to get a good response rate?

The Survey Design

7. Why was the Survey divided into the specific sections that address different aspects of the office environment?
8. What information should each of these section retrieve?
9. What would be an appropriate size for the questionnaire? (Number of questions/time it would take to answer etc.)

Testing the Survey

10. Do you remember any immediate difficulties that occurred when testing the questionnaire? Any feedback from the test group?
11. Any other comments?

2011

Appendix 7
Expert Interview 2

Lukas Windlinger Inversini

Lecturer and Senior Researcher at Zurich University of Applied Science (ZHAW)

Performed by Trine Eide Schjølberg
NTNU Real Estate Development and Facilities Management
30.12.2011

Lukas Windlinger Inversini

Lecturer & Senior Researcher at Zurich University of Applied Science (ZHAW)
Life Science and Facility Management

Management Responsibilities

Head of Business Administration / Human Resources expert group

Expertise/ Research Interests

People, Work, Space & Technology; Human-Environment Interaction; Behaviour in the Built Environment (Research focus: office workplaces and office buildings); Health and the built environment; Social Research; Post-Occupancy Evaluation; Indoor Environment

Education and Professional Development

Master of Science, Work and organizational psychologist

Interview Details

Location

ZHAW (Zurich University of Applied Science)

Date

November 30th 2011

Time

100 minutes

2011

Appendix 8
Expert Interview 3

Nils Gersberg

Research Associate at Zurich University of Applied Sciences (ZHAW)

Performed by Trine Eide Schjølberg
NTNU Real Estate Development and Facilities Management
01.12.2011

Nils Gersberg

Research Associate at Zurich University of Applied Sciences (ZHAW)
Life Science and Facility Management

Expertise / Research Interests

Workplace Management

Usability of Workplaces and End-user satisfaction in FM maintenance services

Education and Training

Total Facility Management, Master of Science, 2005, University of Applied Sciences Muenster, Germany

Total Facility Management, Bachelor of Engineering (FH), 2003, University of Applied Sciences Muenster, Germany

Interview Details

Location

ZHAW (Zurich University of Applied Sciences)

Date

December 1st 2011

Time

30 minutes

2011

Appendix 9
Expert Interview 1

Siri Hunnes Blakstad

Head of Workplace Management at Telenor Real Estate

Prepared by Trine Eide Schjølberg

NTNU Real Estate Development & Facilities Management

21.11.2011

Siri Hunnes Blakstad

Head of Workplace Management at Telenor Real Estate

Expertise

Workplace management
Facilities Management
Adaptability

Research in Facilities Management and Architecture

Knowledge workplaces
Space Management
Evaluations of Usability
Adaptability in office buildings
Building processes and –economics

Education

Dr.ing, Adaptability in Office Buildings 2001, Norwegian University of Science and Technology (NTNU)

Master of Architecture, 1994, Norwegian University of Science and Technology (NTNU)

Interview Details

Location

NTNU Trondheim

Date

November 21st 2011

Time

45 minutes

NTNU
Det skapende universitet