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**Possibilities of Telework as an Organisational Tool for the Flexible
Arrangement of Teachers' Work from the Teacher's Viewpoint**

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ABSTRACT

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The goal of the study is to survey the possibilities of telework as a tool for arrangement of teachers' work in the Department of Computer Science and Information Systems in the University of Jyväskylä. In the study telework is understood like working outside the office. It replaces work done during regular working hours at the office. Telework can be either full-time or part-time teleworking. Overtime work done after normal working hours is not included in the concept of telework. The study is focused on the viewpoint of the teacher's while the perspectives of the other groups of the staff are mostly left out from this examination.

Recent societal changes support the assumptions that telework may be a useful tool for the arrangement of teachers' work in universities. Therefore, it is reasonable to study the needs and attitudes towards it. Specifically, they are investigated by the survey for the educating people in the Department of Computer Science and Information systems. The framework and the questionnaires were created based on the literature review.

Based on the results it can be stated that the motivation factors, advantages and disadvantages of telework are consistent with the studies in different countries. However, there are differences in the meaning of family and work related factors between different cultures. Also, the theory concerning the careful case-by-case consideration of the use of telework was supported in this study. In summary, it can be stated that telework can be a useful tool for the flexible arrangement of the teacher's work.

KEYWORDS: telework, organisational tool, management, teacher, university

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1 INTRODUCTION

Nowadays, people try increasingly to achieve better balance between their working and private life. They are more and more aware of different possibilities to organise their working manners and they have the courage to demand better consideration of their needs. Also, business life is changing while it has to adapt to new societal and market situations, which drive them to adapt their principles to the requirements of labour and international markets. Meanwhile, the whole society is changing as borderlines between countries are losing their meanings when individuals and organisations expand their activities across countries.

Clearly, flexibility is necessary nowadays. When employees have possibility to arrange their work more flexibly or when organisations adapt their affairs more flexible, it can be considered as flexible work. When this arrangement leads to working outside the office it is called telework.

The terminology of the area has not established yet. In this study telework is understood as a mode of flexible work, which is performed outside the office. It replaces work done during regular working hours at workplace and can be either full-time or part-time teleworking.

Because telework is understood as a way to arrange work the management viewpoint is relevant concept of the study, also. Management means co-ordination and integration of work activities so that the goals of the operation can be achieved as efficiently and effectively as possible. This co-ordination and integration occurs through other people. (Robbins & Coulter 1999: 8 - 9.)

There are some typical problems of this area. Because the terminology has not been established yet in this area, a reader has to be very careful while reading articles. Usually the used concepts are incomparable (McCloskey & Igbaria 1998: 344 - 345). Some problems may occur because the studies are mostly based on qualitative material that are difficult to measure and classify. The third problem of the field consists of several extraneous factors that generally are not considered in telework research. For example, full-time and part-time teleworkers, different occupational groups like clerical,

managerial or professional employees may be equated. (McCloskey & Igbaria 1998: 345 - 347.)

Donna Weaver McCloskey and Magid Igbaria (1998: 340 - 342) classify the studies of telework to five areas: 1) pilot studies, 2) usage, 3) beliefs / perceptions, 4) work attitudes / outcomes and 5) work and family issues. This study considers beliefs and perceptions but also attitudes and outcomes are considered because most of the respondents have teleworked already.

In this study the focus is directed to university setting where we can see individual, organisational and societal change requirements. The planning and implementation of telework is a complex social-technical change process that has to be understood in its context and designed carefully (Limburg 1998: 96 – 97). The implementing process of telework consists of three main stages: 1) Initial studies, 2) Preparations and 3) Implementing (Hanhike, Immonen, Kanerva & Luukinen 1998: 121 - 123). This study is a part of the initial studies. The aim of the study is to examine the needs, interest and attitudes concerning teachers' teleworking in the department of Computer Science and Information Systems in The University of Jyväskylä. It would be interesting and, also, necessary to study the needs, interest and attitudes of all the staff because the implementation of telework is comprehensive process but there would be too much work to do for Master's thesis. Thus, this study considers the teachers while the other groups of the staff have to be examined later. The results of the study should be interesting for different kinds of educating organisations.

The goal of the study is to survey the possibilities of telework at The University of Jyväskylä. Telework is examined from the perspective of employees and it is understood as an organisational tool. The aim of the study is to find answers to the questions as follows:

- Q1: What are the factors that drive or restrain telework of the educating people?
- Q2: How the educating people expect telework to influence their work?
(Possibilities and threats)

Q3: How the attitudes and beliefs of the educating people differ from the results of the earlier studies?

Q4: How telework could be adopted at the department?

The approach of the case study is empirical. The aim of the study is to find out the motivation factors, advantages and disadvantages of telework in the department and to compare them to the results of the previous studies. The comparison is based on the literature review and the surveys at the university. It is considered how the results can be generalized to the other departments and universities, also.

The approach of this research paper is linear-analytic (Yin 1994: 138). The concept of telework is introduced in the chapter 2, which describes telework and its different forms. After that, the motivating factors, advantages and disadvantages of telework are considered. They are discussed from the viewpoint of individuals, organisations and society. In the last section of chapter 2 the focus is directed to telework as an instrument for management. Chapter 2 forms the literature review of the study.

In chapter 3 the attention is focused to the University of Jyväskylä. First, the organisational factors of the university are presented and, after that, the problems and research approach are highlighted and research design is presented.

In chapter 4 the results of the study are presented. Thereby, demographic characteristics of the respondents, their desires for telework, driving and restraining forces, possibilities and threats of telework and general interest in telework are described. Also, the results of the survey to administrative people of all departments are presented.

Finally in chapters 5 and 6 the results of the study are discussed and concluded critically. Moreover, the recommendations for the future actions and discussions, how the results can be generalized, are presented.

2 TELEWORK

2.1 Telework a Mode of Flexible Work

There is not any consensual definition of telework. In this chapter different kind of definitions of telework are presented. In addition, the other terms commonly used instead of telework or the terms that are closely related to it are considered. Thereafter, the different modes and some classifications of telework are introduced and, finally, the definition of telework used in this study is presented.

2.1.1 History and Definition

There are quite a lot of terms that are sometimes used instead telework: telecommuting, distance work, remote work, flexible work, flexiwork and flexwork. The word telecommuting has been used in the USA since 1970's. In those days telecommuting meant commuting by telephone and its goal was to decrease traffic jams. Jack Nilles has been mentioned as a key promoter of telecommuting in the USA, while Francis Kinsman popularised the concept in his book "The Telecommuters" in 1987. Meanwhile it has become known as flexwork in Japan and telework in Europe. (Bergum 1998: 77; Hanhike, Immonen, Kanerva & Luukinen 1998: 7; Pekkola 2002: 26; Rönkä 1994: 2.) The newest term in the field is "e-work", which is sometimes used to refer to telework (Pekkola 2002: 23), while Enterprise Ireland's eBusiness (2002) defines e-work as a mode of telework. It defines e-work as working place independently by using modern information and communication technologies.

Term *flexible work* can be understood most widely: flexible organisation of work by different kinds of ways (Heinonen 1998: 11). For example, Finnish Ministry of Labour defines flexible work as a concept that includes also issues from managerial systems and the other elements of working life. (Rönkä 1994: 2) Thus, flexible work can include also reduction of working hours and job alternation leaves. The aim of flexible work is improve the employee's possibilities to integrate work with individual requirements.

Telework, *telecommuting* and *remote work* are commonly used like synonyms. However, are differences between them. Generally, telework is understood as a European counterpart of telecommuting and the use of it is quite widespread. As

mentioned before, telecommuting is used in the U.S.A to denote telework but sometimes it is also used in a more restricted sense: working at home instead of commuting to the office. Remote work is used quite rarely. In this study telework was chosen because this is a European study and telework is the most illustrative term for the definition used in this study.

The word "telework" can be examined from linguistic viewpoint. The word can be divided in two: "tele"-prefix and the root word – work. "Work" is quite unambiguous word while "tele"-prefix can be understood in two ways. The first and the initial interpretation is "at a distance". This sense was created at the beginning of the 1600s when Galileo Galilei and Johannes Kepler take use the words *telescopi* (Italian) and *telescopium* (Latin). With this device the use of "tele"-prefix was transferred to English (telescope). After that the prefix was used in other contexts (telegraph, telephone, television), also. As late as 1932, when the word "telecommunication" was coined, the sense of "tele"-prefix was still preserved as "doing something over a distance" and telecommunication refer to communication over a distance by all means. Soon after that, the word got a new overtone: *"communication over a distance by electrical means"* (Quinnon 1998). Thereafter, the "tele"-prefix has continued its triumphal march with its new sense: "doing something at a distance with electronic tools". Good examples are telepresence, telematics, teleworker, televersity and tele-education. (Quinnon 1998.) However, it is unclear if the interpretation of "tele"-prefix really changed. Perhaps the illusive connection to the electrical means is only consequence of recent stage of technology where almost all new inventions are electrical.

On the basis of this linguistic viewpoint the concept of telework seems to be quite clear, just like Robert E. Beasley and Ewuk Lomo define it. They use the American English word telecommuting and define it as working from distance - away from worker's regular office. However, they do not comment if electronic means are used. (Beasley & Lomo-David 2000: 113.). On the other hand, the concept is not so clear. As Emilia Fodrigues Araújo (1998: 59), Sirkka Heinonen (1998: 11), Donna Weaver McCloskey and Magid Ibgaria (1998: 341 - 345) remind, there is not consensual definition of telework although it would be urgent to have it. The definitions of telework differ in presumptions of technology, location, employment relationship and structure, like

after-hours telecommuting. Thus, it is difficult to compare the results of different studies to each other. The reader has always to be aware of the context of the study and the definition of telework. For example, the estimated amounts of Finnish teleworkers vary widely between different studies because the different definitions of telework. (McCloskey & Igbaria 1998: 342 - 345; Pekkola 2002: 57.)

Araújo and many others (Araújo 1998: 60-61; Hanhike et al. 1998: 7; Heinonen 1998: 11; Rönkä 1994) define telework as working from distance. The distance can exist between an employee and her employer or between the members of a group working in their employer's office (distributed groupwork). In addition to distance, most definitions require that work is based on the usage of information and communication technology (ICT). Svein Bergum (1998: 77) adds to definition that work has to be formalised, performed mainly during normal office hours and regularly, which he considers as the most common definition of telework.

Malin Brännback, Markku Nurminen and Pekka Reijonen (1998: 1) ponder more deeply on distance. They claim that distance cannot exist between work and worker because knowledge worker's work is done in her head. Also, the material and utensils are usually present, while data or co-workers may be telepresent. Therefore, they define telework as "*a matter of collaboration, cooperation and co-ordination of people over distance*" (Brännback, Nurminen & Reijonen 1998: 1), which means that telework is like a social concept, not a technological artefact.

Furthermore, in Finnish Working Life Barometer telework was defined as work that have been performed outside the office using ICT, although, it could be done in the office, too. It is also essential that work is time and place independent. According to this definition, work of telephone mechanics is not telework even though she works outside the office. More exact definition can be created if agreement on teleworking is required (Pekkola 2002: 17 - 57). Still, there are some factors that influence the definition of telework. For example, self-employed people and overtime workers can be included or excluded from the definition. (McCloskey & Igbaria 1998: 344; Pekkola 2002: 57 – 58.)

Araújo (1998: 60) and Juhani Pekkola (2002) see telework as a technique that can be used by individual, management and government to achieve their goals. Thereby, it is a

way of organising work (Araújo 1998: 57). Wilhelm Dangelmaier, Stephan Kress and Rüdiger Wenski crystallise this viewpoint in the statement: "*Telework is considered as an innovative work organization form for new decentralized structures*" (Dangelmaier, Kress, Wenski 1997: 128). Also Van der Wielen defines telework as a form of an organisation that lies scattered by both temporal and spatial nature. When the time-and-place constraints are relaxed completely it is called virtual organisation. (Limburg 1998: 94).

Teleworking or telecommuting person is called *teleworker* and *telecommuter*. Victoria Bellotti considers teleworkers more exactly. She divides them in two types, *teleporters* and *telepaths*, according to teleworkers' different needs. A teleporter is a person who works away from the office infrequently. She wants to avoid interruptions that are more frequent in the office than at home. The teleporter needs technology only for transferring materials. In contrast, a telepath works mainly afar from the organisation's office and her fellow workers. She needs ICT to effective interaction with the other workers. (Scholtz, Bellotti, Schirra, Erickson, DeGroot & Lund 1998.)

2.1.2 *Different Modes of Telework*

Home-based teleworking or electronic homework occurs when the employee works at home without commuting to the office. Generally, it is supposed that a home-based teleworker is a "salaried" worker, while sometimes home-based telework is used to mean work that is performed at home by self-employed person. (Rönkä 1994: 13; TYT 2000: 16.) Working at home or in a private cottage does not require any special building permit if it will not cause disturbances in the environment or additional cost for municipality (Rönkä 1994: 32, 34). Telework is often understood like home-based telework only, and most teleworkers are interested in this mode of telework (Habib & Cornford 1996: 297; Rönkä 1994: 13). Possible motivation factors are presented later in the chapter 2.2.

Telecentre (neighbourhood office) is located near home or a place where it is easy to travel. Office facilities and network connection are offered for the people who do not like to travel to the office but who also do not like to work at home. There are workers from many companies in the telecentre. This kind concentration of workstations usually

enables the use of better quality techniques and security than home-based telework. Other advantages are the opportunity for social contacts, technical and other assistance. It is also possible that the employee does not have to change the geographical place of a workstation when she will change the employer. Disadvantages, like higher costs of premises, occur if the worker teleworks only part-timely and she needs also a workstation in the employer's premises. Originally, the concept of telecentre has born in Scandinavia. (European Telework Online 2000a; Engström & Johanson 1998: 135; McCloskey & Igbaria 1998: 343; Rönkä 1994: 14; Simmins 1997.)

Telecottage is similar to telecentre but it is usually community based and it has a social role. The community tries to provide possibilities for learning, the use of technology and access to work for its local community in the telecottage. (Rönkä 1994: 14; Simmins 1997; European Telework Online 2000c.) The aims of telecottages are the prevention of moving from countryside to cities and the providing of more social environment than at home, also (Habib & Cornford 1996: 297; Rönkä 1994: 14). While some works full timely in the telecottage, others may only visit there to use some facilities or drink a cup of coffee. Usually a telecottage lies in the countryside and the premises are converted from redundant farm buildings or schools. Similarly to the idea of the telecentre, the idea of the telecottage was created in Scandinavia in the middle of 1980's. From there it has spread to the other parts of Europe. (European Telework Online 2000a; Rönkä 1994: 14; Simmins 1997.)

Televillage can be understood as a lifestyle. Televillage forms a whole community where rural lifestyle is respected but also the newest technology and its advantages are used. In the televillage everybody has their own network connection at home and people are expected to be self-determined and successful. The idea was developed in Wales. When this way of living is situated to the scale and lifestyle of city the term is *multifunction polis*. It is the centre where home, work and free time life are located in the same urban environment. (European Telework Online 2000a; Rönkä 1994: 15-16.)

Satellite office (or satellite work centre) is owned by the company and there is all required equipment. The aim is to bring work closer to the employees' place of residence. Thus, it is possible to reduce the time and costs of commuting and the expenses of office maintenance and management. The idea of the satellite work centre

come from Japan. A typical example of this kind telework is a call centre. (Engström & Johanson 1998: 135; Habib & Cornford 1996: 297; Houlihan & McGrath 1998: 32; McCloskey & Igbaria 1998: 343; Rönkä 1994: 14.) For example, Finnish Posti has embraced this ideology, while it has decentralised customer service centres to Helsinki, Rovaniemi and Kuopio. According to Kari Haaja, developing manager, the geographically separate satellite work centres form one hole by using same systems through network. Posti chose decentralisation because more employees are available outside of Greater Helsinki. (Raivio 2002)

Office hotel (business centre) is a building that serves several companies. Premises are only for official use, not for manufacturing operations. The companies pay the rent and can use the common services such as secretary, cafeteria and telephone exchange. An external company typically owns the office hotels, which principle is commercial. (Rönkä 1994: 15.)

Resort office is concept that has also been invented in Japan. Its purpose is to offer the place for holiday spending and quiet individual working. (Rönkä 1994: 15.)

Science park is perhaps the most clearly defined by the name Silicon Valley that is also the birthplace of the concept. While office hotels and telecentres provide premises mainly for business purposes, the goal of the science park is to support business life by connecting together companies, universities and research institutes. The first science park of Finland lies in Oulu. (Rönkä 1994: 15.)

Nomadic telework (mobile work, mobile telework) occurs when work moves with the worker. Nomadic teleworker uses actively notebook and mobile phone. She also values services that take into consideration the needs of the nomadic teleworker such as hotel rooms and airlines with network availability. Nomadic telework include work done in the customer's premises, also. (European Telework Online 2000a; Hanhike et al. 1998: 7; Rönkä 1994, 2; TYT 2000: 16.) Depending on the definition, an example of a mobile worker can be a service person who spends a lot of time on the road and uses ICT to make use of employer's resources (European Telework Online 2000c). However, nomadic telework is sometimes excluded from the definition of telework because it is not free from the constraint of place. For example, telephone mechanic has to work

there where the devices are, thus she cannot choose her workplace freely (Pekkola 2002).

Concentrated centre is an opposite idea than the satellite office. While the satellite office supports distribution, the concentrated centre is used for concentration. (European Telework Online 2000a.) This concept is common in IT area where many customer support centres are concentrated to few places. Another example is a remote monitoring centre, which monitors the networks and devices of several different organisations. In Finland this kind of remote monitoring centre is Eterra, for instance, which monitors Berner's network systems. Berner gets economic benefits and better performance because they do not need to hire specialists of this area and worry about updating of their knowledge. (Lagus 2002.) It can be questioned is the concentrated centre as a mode of telework or is it only externalisation of some operations. It can be included in telework if the distance between the worker and the object of work, regardless of daily commuting to the office, is included in the definition of telework. Instead, if there have to be decrease in commuting, concentrated centre cannot be defined as a mode of telework.

Telecooperation occurs in employer's premises. In this situation worker travels to the office but there she communicates with colleagues and other professionals by using ICT. The idea of telecooperation is to form useful networks regardless of people's geographical location. (European telework Online 1997.) One mode of telecooperation is distributed groupwork where workers in different premises work together to achieve the goals of the group. (Hanhike et al. 1998: 7). Telecooperation is used, for example, in Kvaerner Masa-Yards where international team working is used for the planning of ships. Those teams consist of several experts and subcontractors from all over the world. In addition to e-mail, they view and modify also CAD-materials over Internet. (Vaalisto 2002.) Similarly to concentrated centre, telecooperation is not always included in the concept of telework because the worker still commutes to the office.

2.1.3 *Different Classifications of Telework*

Teleworking occurs in many different ways and its classifications are also made from different viewpoints. Beasley and Lomo-David present the classification of Lomerson and Anderson (TABLE 1). They discuss teleworking of computing professionals that is reflected in the names of the classes. Lomerson and Anderson divide teleworking into three discrete classes according to the permanence of remote location. The first and the most fixed class is telecommuting. There the employee works at a fixed remote location, like at home. The second class is remote access computing where the teleworker has multiple fixed remote work locations. The third and the least fixed class is nomadic computing where the employee works at many variable locations. (Beasley & Lomo-David 2000: 113.) Even though, the classification has been formed for computing professionals it can be used also with other occupations.

TABLE 1. Lomerson's and Anderson's classification of telework (Beasley & Lomo-David 2000: 113)

Class of telework	Explanation (example)
Telecommuting	Fixed place (at home)
Remote access computing	Multiple fixed locations (a consultant in several separate organisations)
Nomadic computing	Variable locations (salesperson)

Limburg (1998: 96) introduces Lars Qvortrup's categories of teleworking (TABLE 2). There Qvortrup divides telework to three classes according to the roles and positions of the teleworker. The classes are electronic homework, telecommuting and "flexiwork". He defines electronic homework as work that is always done at home for an external customer (an organisation), which implies that the teleworker is self-employed. The other two classes are based on an assumption that the teleworker is a wage earner and that she has the employer. Telecommuting is defined as a work that is partially performed at a distance. Instead, flexiwork is work that can be done everywhere.

TABLE 2. Qvortrup's classification of telework (Limburg 1998: 96)

Class of telework	Explanation (example)
Electronic homework	Self-employed people working at home (freelancer)
Telecommuting	Wage earner working from distance (researcher who writes a report at home)
Flexiwork	Wage earner working from everywhere (salesman)

Rönkä (1994: 13) uses a classification, which he has constructed from the materials of Qvortrup and Finnish Ministry of Labour (TABLE 3). The classification separates the modes of telework according to the type of workstation, building or area: The classes are: a) electronic homework (home based telecommuting), b) shared-facility centres, c) satellite work centres, d) office hotels (business centres), e) resort offices and f) science parks.

TABLE 3. Rönkä's classification of telework (Rönkä 1994: 13)

Class of telework	Explanation (example)
Electronic homework	Employee works at home. (researcher who writes a report at home)
Shared facility centres	Employer or individuals can rent premises and worker can use common facilities. Supported by society. (neighbourhood work centres, local work centres, telecottages)
Satellite work centres	Employee works the employer's premises but nearer home.
Office hotels	Employer rents premises and worker can use common facilities. Commercial pricing of rents.
Resort offices	Connect free time and individual working requiring concentration
Science parks	Connect together companies, universities and research institutes (Silicon Valley)

The above tables indicate that the same words are used in different senses. For example, electronic homework can be understood either as work done by self-employed person or by the employee of the organisation.

2.1.4 Typical Use of Telework

Telework is a suitable method for every task, which deals with information or knowledge (Dangelmaier, Kress & Wenski 1997: 129). However, it is mostly used in work that is performed alone. Beasley and Lomo-David refer to the study of Khalifa and Etezadi who have defined the occupations of computing professionals that are most suitable for telework: technical writer, programmer, data entry clerk, and systems analyst. (Beasley & Lomo-David 2000: 114.) The Finnish telework potential has been estimated to be between 20 % and 40 % of work force depending on the criteria of estimation. The results are estimated by defining the potential occupations to teleworking and finding how many people work in those occupations. The lower estimate includes the occupations are suitable for telework nowadays. When the occupations that will be possible to carry out by telework in the future are also included, the telework potential was increased to 40 %. (Heinonen 1998: 66).

According to Nurmela, Heinonen, Ollila and Virtanen (2000: 37) willingness for teleworking is smaller than possibility to it (TABLE 4). The rates are consistent with the result of Heinonen's study on potential telework population where the possibility to teleworking would be 20 % of the working population in Finland. (Heinonen 1998.) However, this possibility varies depending on area where worker lives. In Greater Helsinki the possibility is significantly greater than in sparsely populated areas in Northern and Eastern Finland. (Nurmela, Heinonen, Ollila ja Virtanen 2000: 39, 53.)

TABLE 4. Willingness and possibility of teleworking according to Nurmela, Heinonen, Ollila and Virtanen (2000)

Sex	Willingness	Possibility
Men	10	17
Women	12	21

According to Finnish Working Life Barometer in 1997, a typical teleworker is a executive clerical knowledge worker. Men telework more than women, while age is not a significant factor. The Only exception is the group of people fewer than 25 year-olds who telework less than others. A reason for this is that the potential teleworkers are

studying at this age. In 1997 about 12,5 % of Finnish wage earners teleworked. In this study the definition of telework includes the use of information and communication technologies but it does not include self-employed people. Teleworking occurs typically 1-3 days per month. (Pekkola 2002: 58, 60 - 61, 63, 223.) Professionalism and male are characteristic factors that were discovered to correlate positively with teleworking also in other studies in other countries. (Ruppel & Harrington 1995: 99; TYT 2000: 18.)

2.1.5 Conclusions

It is obvious that a generally accepted definition for telework could not be found. However, it is clear that the central components of telework are time, place and the use of ICT (Pekkola 2002: 35). Thus, they are the main components of definitions.

In this study telework is understood as a flexible work arrangement. It is a technique of management. *Teleworking is working outside the office. The teleworker has a job contract with the employer but the special agreement on telework is not required. Telework replays work done during regular working hours at the workplace. The use of information and communication technologies is not required. Telework can be either full-time or part-time teleworking. Overtime work done after normal working hours is not included in telework.*

Telecooperation and concentrated centres are excluded in this research because there occurs commuting to the office. The focus of the study is on the work done outside the office while it could also be done in the office. Therefore, the official meetings outside the office with people from other organisations are excluded.

The use of ICT is not central point of the subject. It is only a technique that can be used if necessary and therefore it is not required by the definition. For example, the material can also be transferred by other ways (e.g. paper copies). Moreover, same kind is the situation with the agreement. If there would not be an official agreement on teleworking, it may occur anyway. However, the agreement is excluded from the definition it is necessary to consider when teleworking is implemented.

Excluding overtime work from the definition can be justified by the assumption that work done after the regular working hours is not equal to work done during office

hours. Typically, work that requires concentration and is possible to do independently is done as overtime work. Thus, for example the social matters concerning telework do not concern overtime work.

In this study telework is divided into five classes:

1. Teleworking at home or other private premises like summer cottage (home-based teleworking, resort office)
2. Teleworking near home in the building with workers from different organisations (telecentre, telecottage, office hotel)
3. Teleworking near home in the building with other workers from the same organisation (satellite office)
4. Teleworking in the office of some other organisation (nomadic telework with permanent place)
5. Teleworking place independently like during travelling (nomadic telework with inconstant place)

The classification is based on the social and spatial differences between the different modes of telework. It does not include telecooperation and concentrated centres because they are excluded also from the definition of telework in the research. Instead, science park can be included either to the class 2 or 3 depending on are there other workers from the same company.

2.2 Benefits and Drawbacks of Telework

Telework was defined like a technique in the definition and, therefore, it cannot be seen to be good or bad itself. However, the use of it can offer new possibilities or threats. (Araújo 1998: 60.) As Juhani Pekkola says (2002: 232), it is a neutral way to organise work but its consequences can be positive or negative. It depends on how it is used.

This chapter the driving forces (benefits) and restraining forces (drawbacks) are considered. These are examined from three perspectives, which are used also in the analyses of Engström and Johanson (1998: 130). The perspectives are the individual perspective, organisational perspective and societal perspective.

2.2.1 *Individual Perspective*

An individual may try to achieve personal goals by telework. Telework influences people's life in two levels. On a situational level it influences the time and place factors of life and in mental level it influences the way, how people actualise their energy and sociability. (Araújo 1998: 62.) By teleworking, people can influence the balance between work and private life and organise it in more satisfying ways (Bergum 1998: 75; Engström & Johanson 1998: 129, 143). Teleworking may mix them again. Altogether, generally telework is understood as a personal fringe benefit that will produce both economical and psychological advantages for the teleworker.

Beasley and Lomo-David (2000) divide individual motivational factors of telework into seven categories. They are 1) family life, 2) work environment, 3) the commute to and from work, 4) economics, 5) personal interests, 6) crime avoidance, and 7) health. However, the single factors belonging to a group can be questioned. For example, the possibility to use more comfortable clothes could be discussed from the viewpoints of economical, work environment or personal interest viewpoint.

Family

The study of Beasley and Lomo-David (2000: 116) focuses on computing professionals in various organisations in various cities in the United States. According to the study, the most important reason for computing professionals' telecommuting in the United

States was their family, especially the possibility to spend more time with the members of the family (TABLE 5).

TABLE 5. Motivational factors among computing professionals in the study of Beasley and Lomo-David in order of importance, N=132 (2000: 115 - 117)

Place in order of importance	Group of factors (factors included in the group)
1.	* Family - more time with their children - more time with their spouses - ability to combine home upkeep with job requirements
2.	* Work Environment - flexibility in work hours - time it saves them travelling to and from work - overall job satisfaction - freedom to work alone and undisturbed - ability to wear whatever clothes they wish while working - ability to do work at home that that they do not have time to do at the office - ability to control the temperature of their work environment - ability to avoid difficult coworkers - ability to avoid difficult bosses
3.	Health - lower work-related stress - ability to eat home-prepared food rather than fast food - ability to take a nap or short rest in the middle of the day when needed
4.	Economics - save money on transportation - save money on child care expenses - save money on clothing, cologne, perfumes, etc.
5.	Traffic - avoid daily struggle with traffic - avoid traffic catastrophes - avoid traffic citations and arrests
6.	Crime Avoidance - reduce the chances of daytime burglary of residence - reduce the chances of being mugged on the way to and from work - reduce the chances of being car-jacked to and from work
7.	Personal Interests - use company equipment to pursue personal interests

* Important factor according Beasley and Lomo-David

Family has also been indicated to be as a positive factor in other studies like in the study of Thompson S. H. Theo, Vivien K. G. Lim and Sook Har Wai in Singapore (TABLE 6). A reason may be that there are no more housewives who take care children and home. Instead, the women have moved to working life resulting in conflicts between the duties of home and the career. At the same time, the husbands have taken more

responsibilities for housekeeping and childcare. (Duxbury, Higgins & Neufeld 1998: 243; McCloskey & Igbaria: 1998: 338 - 339; Teo, Lim & Wai 1998: 335.)

TABLE 6. Motivational factors among the members of an IT organisation in Singapore in the study of Teo, Lim and Wai, N=285 (1998)

Place in order of importance	Factor (percentage of respondents)
1.	* When I have children (53,3)
2.	* When I get married (27,7)
3.	* When I am pregnant (15,8)
4.	Flexible working hours (4,2)
5.	When my children start schooling (3,9)
6.	No particular reason; already interested (3,2)
6.	When I want to reduce transport time or save transport costs or avoid traffic congestions (3,2)
6.	When I have to take care of my aged parents or when my parents fall ill (3,2)
6.	When I want to pursue further studies (3,2)
6.	Others (3,2)
11.	When I want to get out of the work environment or when I do not feel like going to office (1,4)
12.	When I have to attend to my personal needs (1,1)
12.	When I become old and frail (1,1)

* Important factor

In addition to the teleworker, the whole family has to be considered. Work at home is not always considered as efficient as is working in the office. The members of the family may think that working at home means working not at all and they might demand the teleworker to do household chores, also, or they simply do not esteem teleworking as much as working in the office. (Araújo 1998: 65.) Family may also disturb the teleworker at home. The problems with the family can be prevented or reduced by a separate working room and agreement on working times (Hanhike et al. 1998: 107).

Working Environment

Teleworking may enable more flexible working hours and thus, a person can integrate working life to the individual life situation in a more satisfying way. For example, the teleworker can have an additional rest in the middle of working day or she can start later

or earlier if it is more suitable for her lifestyle. She also has more free time because of the decrease in commuting. In the study into computing people in the U.S. flexibility in work hours was the second best single motivational factor of telework. On the other hand, more irregular eating habits may occur as a drawback. (Beasley & Lomo-David 2002: 116 - 117; Brännback et al. 1998: 4; Duxbury et al. 1998: 243; Hanhike et al. 1998: 75; Pekkola 2002: 232; Rönkä 1994: 3; Teo et al. 1998: 336.)

However, there are also results that indicate increasing working hours while teleworking. It may be due to impression that the worker should be always reached because of technical possibilities (mobile phone, Internet connection, laptop) provided. The teleworker may also work more because she tries to achieve good results in order to maintain her status and trustworthiness. Thus, adequate self-control and ability to separate working hours and spare time is required. Some people may also need the physical and psychological separation between work and family life so that they can relax in their free-time. (Bergum 1998: 85; Brännback et al. 1998: 4; Duxbury et al. 1998: 243; Habib & Cornford 1996: 299; Hanhike et al. 1998: 75 - 107; Pekkola 2002: 164, 232.)

The second most important group of the factors in the study of Beasley and Lomo-David (2000: 116) in the U.S. was the change in the working environment. There are several factors that encourage people to telework but also some factors that inhibit it.

The possibility of formulating working environment can be as a driving force for telework. Kiti Müller, neurologist from Finnish Institute of Occupational Health, attaches importance to the consideration of dissimilarity between people. For instance, somebody can work in very restless environment whereas the other need quiet and isolated place to work. (Salonen 2001.) By telework a person can try to find working conditions that are suitable for her individual requirements and for the duty. For example, better concentration can be achieved at home if the other members of the family will not disturb. (Beasley & Lomo-David 2000: 116; Duxbury et al. 1998: 239; Pekkola 2002: 42.)

Social contacts

Decrease in social contacts is often seen as a drawback of telework, which may reduce the willingness for it. Telework is also suspected to lead to weaker relationship with fellow workers and to the lose of important information that may cause decrease in the power and status of the teleworker. The teleworker may be afraid that she will be ignored while choosing new persons to projects, for example. The teleworker may also have less feedback than the fellow workers in the office. (Araújo 1998: 65; Brännback et al. 1998: 4; Duxbury et al. 1998: 239; Hanhike et al. 1998: 75, 89, 114; Higa, Sivakumar, Yen & Bui 1996: 357; Pekkola 2002: 56, 82; Teo et al. 1998: 337.)

The social drawbacks of telework can be reduced by part-time telework. In that case the teleworker works regularly in the office that enables better flow of information and the maintenance of social contacts. Also, the telecottage or telecentre can satisfy the individual need for social relationships if it is located near home. (Rönkä 1994: 12, 38.) The thorough planning and implementing of telework can ensure the flow of information. It may be necessary to have an office worker who is responsible for transmitting of information to the teleworkers. On the other hand, it may cause information overload in e-mail and the workers have to manage more and more information. That requires better abilities and means to handle and classify it. (Bergum 1998: 81 – 82; Hanhike et al. 1998: 114.) On the other hand, improvements in the flow of information may enable better availability of needed information for everybody.

Place for Teleworking

Sometimes the individual may like to telework but her environment does not allow it. A limiting factor may be the lack of a suitable place for working at home or the lack of other telework places near home. The interest in teleworking has been noticed to increase if the worker has a study at home. (Rönkä 1994: 13 - 14.) Also, worker's technical and communicational skills may be restrictive factors because the use of technical communication methods is essential during teleworking (Hanhike et al. 1998: 101).

Commuting

Commuting was the fifth important group of the factors in the study on American computing professionals and the sixth important single motivational factor in the study in Singapore. However, in the Singaporean study avoiding the hassle of commuting was the most appreciated advantage of telework. (Beasley & Lomo-David 2002: 117; Teo et al. 1998: 336.) Some occupational groups can benefit from telework particularly because they have many employers. By teleworking they can avoid frequent commuting from the office to the other. For example, those kind groups are freelance artists and journalists. (Brännback et al. 1998: 4.)

Probably, the significance of commuting varies a lot because of different kind of circumstances. The length of the daily way to work has been discovered to have a relationship with willingness for telework (Rönkä 1994: 48). The teleworker can avoid or reduce the travelling to the premises of the employer or the customer. Moreover, it reduces time, costs and awkwardness of commuting. Sometimes also environmental adverse factors have been mentioned to increase willingness for telework. (Beasley & Lomo-David 2002: 116; Duxbury et al. 1998: 243, 248; Pekkola 2002: 236; Rönkä 1994: 4, 13, 48.)

Economics

In addition to costs of commuting, it is possible to save money on childcare expenses and clothing while teleworking. (Beasley & Lomo-David 2002: 117; Duxbury et al. 1998: 243; Hanhike et al. 1998: 75, 114; Rönkä 1994: 2.) However, it may still be necessary to take children to the day-care centre to ensure good enough working conditions.

Health

When the worker can experience to have a possibility to influence her work, it increases her job satisfaction and work motivation. In addition, work related stress has been mentioned to decrease. It seems to be valid with teleworking, also. For example, in the study of Beasley and Lomo-David the health factors, like work related-stress, home-prepared food, and short rest in the middle of the day, were the third important factor

while assessed the driving forces. Teleworking has also been discovered to improve work motivation. (Beasley & Lomo-David 2002: 116 - 117; Duxbury et al. 1998: 243; Hanhike et al. 1998: 75, 114; Rönkä 1994: 3.) On the other hand, more independent working and increased responsibility combined to the slighter support from organisation may also cause more stress (Pekkola 2002: 101).

Personal Interests

According to the Singaporean study into IT personnel, equipment and communication bills paid by the employer was an important factor in the teleworking decision. If the employer offers the needed equipment and connections (Internet, telephone) and allows the teleworker and, perhaps, also the other members of the family to use them for private purposes, too, it may also be as an advantage of telework. (Beasley & Lomo-David 2002: 117; Teo et al. 1998: 340.) On the other hand, the use of ICT requires some basic skills that may also restrain teleworking. However, Hanhike, Immonen, Kanerva and Luukinen (1998: 75, 107) found in their study in the eight Finnish organisations that some teleworkers have also achieved better abilities to use information and communication technologies as a result of telework.

Pekkola (2002: 56 - 57) states that teleworkers' position in the labour market is better. He refers to the Finnish studies of Korte and Wynne in 1996 and his own study in 1993 when he suspects that better position may be a consequence of better professionalism that is typical for the teleworkers. Often telework also improves the results of teleworkers and it improves their image in the labour market. (Pekkola 2002: 56 - 57.) There are also suspicions that the influence of telework on the worker's career can be negative, if the teleworkers are forgotten when new projects or work arrangements are planned. (Bergum 1998: 83; Hanhike et al. 1998: 75, 114.)

A change has been occurred in the attitudes of people, also. Instead of materialism that was characteristic in the 1980s, the prevailing idea is quality of life that consists of well-being of people themselves and their families. Thus, people prefer the work arrangements that enable individual flexibility. (McCloskey & Igbaria 1998: 339.) Rönkä (1994: 14) states also, that due to shorter job contracts that are more common nowadays, it is more difficult to try at achieve stable situation where the both working

members of the family have a long-term job contract and the office near home. These kind problems drive people to use more flexible working methods to achieve more satisfying life.

In summary, there are lot of benefits and drawbacks that are possible while teleworking. Typical benefits are decrease in time and money used in commuting, more time to be with family, flexibility in working hours, better possibilities work in peace, better job satisfaction, lower work related stress and possibility to influence work environment. Instead, the changes in home environment, increase in working hours, lack of trust, difficulties to separate work and family life and decrease in social contacts in the office may be as the drawbacks of telework. However, both the benefits and drawback are strongly related to the individual situation. Therefore, it is obvious that telework is not suitable form of working for everybody and its implementation has to be considered case by case. Also training for telework may be important and aid to understand what the teleworker is expected to do. (Teo et al. 1998: 340.)

2.2.2 Organisational Perspective

Generally, organisations are interested in the results, efficiency and economy. Limburg (1998: 97) mentions that teleworking can benefit the organisation if it improves its performance or ability to adapt to the changes in the environment. It is also necessary to consider changes in the factors of working society like participation, trust, solidarity, and alienation because the influences of telework will not be restricted only to the teleworker. These factors also influence the economy, efficiency and result of the organisation. (Araújo 1998: 54.)

Flexibility

Better flexibility and adaptation of organisations are important in today's global and fast-changing market. Telework can be used to improve both. Flexibility can be improved by avoiding massive head offices and dividing activities into small parts. Thereby, telework is needed for cooperation between different offices. (Araújo 1998: 68; Bergum 1998: 77 - 78, 128; Dangelmaier et al. 1997; Hanhike et al. 1998: 102; Limburg 1998: 93; Rönkä 1994.)

Business Trips

One present trend of companies is geographic expansion (Brännback et al. 1998: 1). When the organisation's own or its competitors' sphere of activities expands, it increases competition and uncertainty. However, increasing uncertainty can also drive the organisation to development. (Nonaka & Takeuchi 1995: 4 – 5.) Geographical expansion or cooperation with other organisations increases the need of different kind of communication methods. Telework enables and facilitates working between the geographically separate offices. By telecooperation the need for business trips can be reduced and it reduces also cost and time used for it. Thus, telecooperation is more and more important skill in organisations. (Brännback et al. 1998: 1; Hanhike et al. 1998: 99, 114.)

On the other hand, the need for travelling is increasingly common in many jobs today and telework supports it by providing possibility to work during business trips or in the customers' premises or hotels. (Hanhike et al. 1998: 99.) For example, WLAN hotspots

are more general. They make possible to connect mobile computers to network. They are opened in hotels, airports, ships, companies and other places where business people travel. (Reiss 2002.)

Economics

If telework is well planned organisation may get savings in the cost of premises, also. However, it requires that everybody does not have own workroom at the office and two units of equipment are not needed. Instead, shared desks (hot desks) are used for working and common rooms for conversations and meetings. (Rönkä 1994: 3; Teo et al. 1998: 337 - 338.)

Better performance may also be obtained through better concentration that may be achieved outside the office. Thus, work efficiency and creativeness will increase. Also the increasing in contacts with outside people may create new viewpoints and ideas. However, better creativeness that is important for knowledge worker can be supported more by comprehensive development of working environment: information systems, management, atmosphere and work organising. (Hanhike et al. 1998: 89, 116; Kling 1991: 87; Limburg 1998: 93; Pekkola 2002: 170 - 171.)

According to Karsten Gareis (1998: 127), an inhibiting factor may be a doubt about the economic efficiency of telework. Anyway, he is convinced of economically feasibility of telework at least in the medium and long term. Concrete evidences about better performance and economy is needed but the results of knowledge work may be difficult to measure. (Hanhike et al. 1998: 101, 108)

Personnel Policy

Telework can also be seen as a mode of organisation's personnel policy and a competition factor in the labour market. Nowadays, there occurs the lack of trained people especially in some geographical areas as well as some know-how areas. In those situations telework can be useful mechanism to hire people because it enables larger search area and many employers experience it as a personal fringe benefit. The more the functions of the organisation are based on specific knowledge the more important for the company is also to keep critical knowledge workers committed by attractive

arrangements, like telework. (Alasoini 2001; Bergum 1998: 75, 78; Engström & Johanson 1998: 133; Hanhike et al. 1998: 116; McCloskey 1998: 339; Pekkola 2002: 42; Teo et al. 1998: 334, 337). There is also the other possible way to use telework globally. Telework makes possible to reduce wage costs by decentralising tasks over the world. It enables the use of cheap labour but it also enables customer services at all hours without night work. (European Telework Online 2000c.)

Different kind of personal fringe benefits commits the workers to the organisation if they experience them to be meaningful themselves. As described before, teleworking is usually experienced in that way and therefore it can be seen like a personnel management tool. However, the use of it requires planning because possible workers' biased treatment results in dissatisfaction and decreased commitment. Moreover, teleworking increases worker's commitment and motivation and decreases sick leaves. (Araújo 1998: 58; Bergum 1998: 75; Rönkä 1994: 3; Schakir 2002b.)

According to the study of Hanhike, Immonen, Kanerva and Luukinen (1998: 90, 109) the support of managers for teleworking will contribute teleworking. Also Cynthia P. Ruppel and Susan J. Harrington (1995:87, 99) found in their study on information system programmers and analysts in the U.S. that the lack of middle manager's support for telework will hinder its implementation. The reluctance of managers can be a consequence of different kind of factors. They may consider that teleworkers are more difficult to manage, for example.

Trust

The third possible inhibitor may be lack of control. (Rönkä 1994: 3.) That may be a reason why teleworker's salary is typically connected with amount and quality of work and the result of department or team, not with working hours. (Pekkola 2002: 62.)

In addition there may also be suspicions about trustworthiness of teleworkers while trust has been discovered to be a central factor of telework adoption. It may be the consequence of higher trust that the implementing of telework is more successful in smaller working societies, but also professionalism can be seen to increase trust. Thus, Perin argues that more important than advanced technologies in organisation are

multivalent social relationships of workplace. (Araújo 1998: 66; Kling 1991: 87; Perin 1991; Ruppel & Harrington 1995: 99.)

But trust is not needed only between the manager and the teleworker. It has to be found also between the teleworker and the fellow workers. (Hanhike et al. 1998: 76.) If the working culture is very collective the individual home-based telework will not be so acceptable. It is more important to be in view like in Japan. In contrast, in the USA the culture is more individualistic and teleworking is more acceptable. (Rönkä 1994: 13-14) Differences between the modes of teleworking in different cultures have also been examined. A study suggests that the organisational culture has a significant effect when teleworking is implemented. It does not only influence the existence of telework but also the mode of telework chosen. For example, satellite centre may be more suitable than self performed home-base teleworking in Japan. (Higa et al. 1996: 357.)

Pertti Jokivuori has researched trust in work societies in Finland. He thinks that Finland is a society of trust where agreements are valid. He also emphasises the importance of trust nowadays. Trust is the force that binds the people to be as a society. (Lehto 2001.) Although the needed change would be slighter, it may still require a new generation that has no deep-rooted conceptions (Pekkola 2002: 146).

Communication

Still, there can be found a factor that may inhibit the implementing of telework in organisation. When teleworked the probabilities of spontaneous meetings for decisions, explanations, and clarifications are more rare and more organised meetings are needed. However, those difficulties can be prevented by good communication routines (mobile phone, e-mail), electronic meeting places, pre-determined official days and the limits to the extent of telework. Small-scale teleworking (part-timely, only small part of the staff) has not significant impact on work society and it may even have positive influence on working because of implementing of new working methods. (Bergum 1998: 80, 85; Hanhike et al. 1998: 75 - 76.)

Communication in teleworking requires special attention. Nonaka and Takeuchi remind that knowledge can be created only by individuals, organisation cannot do it itself. But

communication is required because people need to expand their knowledge in the organisation. (Nonaka & Takeuchi 1995: 59, 61.) Teleworking reduces face-to-face communication and increases communication with electronic means. However, the use of electronic communication media decreases the diversity of information. For example, expressions, which create and establish messages in face-to-face contact, are lost in telephone conversation. (Brännback et al. 1998: 7.) Thus, communication has to be planned, formalised, specific and clear because verification of information is much more difficult and misunderstandings are more usual in comparison to spontaneous face-to-face communication. However, Bergum thinks that a great part of information dissemination can be done using electronic communication, especially regular and routine type of communication, but it requires that both managers and subordinates use same methods. (Bergum 1998: 84.)

As mentioned before, the teleworker may be afraid that she would be left without critical information. Thus, it is important to provide same information both to the fellow workers in the office and to the teleworkers. For example, the teleworkers have to get information about spontaneous activities also, so that they have same possibility to join. The more teleworking occur, the more challenges will occur with communication. The role and attitudes of managers are significant because they are central in the distribution of information. (Araújo 1998: 66; Bergum 1998: 81 - 82; Ruppel & Harrington 1995: 87, 99.)

But the changes in flow of information are not always negative. If the implementing of telework has been done carefully and it has been succeed the communication will improve because all information is available electronically. It enables the use of information for everybody regardless of work place and time. (Grimshaw & Kwok 1998: 66.) But then, it is critical to ensure that the workers will not overload with information. It is important to remember that the reasons for teleworking can be different. If teleworking is applied especially because of possibility to work in peace it might even be better if different kind of communication is rejected while teleworked. In that case teleworking probably is not so frequent and adequate flow of information can be arranged by traditional ways.

Technology

If teleworked more, there may exist some problems because the teleworker has to do everything herself. For instance, she has to deliver letters to the Post and change the cartridge of the printer. More trouble may occur because the teleworker has to take materials and utensils from the office when she will work outside. (Hanhike et al. 1998: 76.)

Technology may facilitate teleworking if the information systems are equally used at home or where ever and their usability is good. But the lack of needed technology or skills can prevent the introducing. For example, with some duties it is also critical to have the good enough rate of data transmission. However, maintenance and support of systems may be more complicate when they are placed outside the office. Thus, the teleworker has to have adequate skills to use them and technical support has to be practicable. Thus, it is recommendable that the organisation provides the devices and programs needed so that the supporting and compatibility can be ensured. (Bergum 1998: 81 - 82; Hanhike et al. 1998: 101, 113; Teo et al. 1998: 338.) However, those requirements are more and more easy to meet today and future because of the advance of those techniques progress with high speed just now.

When the use of information systems is extended outside of the organisation's premises there will arise new requirements of information security. It will be more important and complex. (Hanhike et al. 1998: 101 - 113; Teo et al. 1998: 338.) For example, when Kvaerner Masa-Yards extended their telecooperation with the experts and subcontractors from several different countries they had to improve their security systems. They developed the "demilitarised zone" where outsiders can come through a firewall and use the materials in there. Server located also in this area retrieved additional materials needed from the internal network of the company. More security factors had to solve when mobile phones with GPRS connection were introduced to reading of e-mails. (Vaalisto 2002.)

Although the technical requirements would be good enough, the communication culture in the organisation may inhibit the use of technology. It means that everybody in the organisation have to start to use new communication means. However, the culture is not

stable and the new means of communication have an influence on organisation culture. (Hanhike et al. 1998: 101.)

It can be seen that there are quite a lot of factors that have to be considered in organisation when telework is implemented. Thus, it is understandable that the lack of established practices of contracts may be a restrictive factor when managers consider the use of telework. (Pekkola 2002: 236.) However, there is elaborating trans-European scripts for the contracts of telework and in September 2002 from Internet can be found many guidelines and outlines of the contracting for telework.

In summary, there are many consequences of telework that can generally be seen as advantages for the organisation: increase in flexibility and performance, better possibility to get skilled labour and keep them in the organisation, decrease in costs and business trips as well as better possibilities to work during necessary business trips. On the other hand, there also some challenges like lack of control, trust, changes in communication and increasing need for organising.

2.2.3 Societal Perspective

Not only individuals and organisations are not interested in telework. It is an instrument that affects whole society, too. Thus, the governments and other administrative organisations are also interested in it. Governments see the benefits of telework in three levels. The most important level is the viewpoint of companies and government agencies. The second level is the standpoint of environmental matters and the last is the perspective of individual workers. (Habib & Cornford 1996: 297.) In this study teleworking has already considered from the viewpoint of organisations and individuals. In this chapter the expectations of the governments are discussed.

The governments expect telework to improve economic activity and employment. The effects can be discussed on the scale of one city, the whole country or the whole world. By using telework, work can be transferred to the areas having higher unemployment or better possibilities to live, for example to build new houses and more pleasant environment. (Rönkä 1994.) Because of new technology patient records can be easily sent from American doctors to India where salaries of typists are smaller, for example.

Both the organisation and target country will benefit. In large scale it can affect the economic and employment situation of the countries. In education sector the University of Oulu is decentralised education to other municipalities by the use of distance education. Jouni Similä, professor in Department of Information Processing Science, says that the aim is to support companies in different municipalities. Also the municipalities experience distance education beneficial because most students stay in the region where they have studied. (Kalliokoski 2001.)

When people stay in the place of their residences they also attract services there. The economic activity and the level and diversity of services will improve. It enhances also the life of senior citizens and invalids because they can find services near their homes. Telework can also hinder people from moving to the growing areas that reduce the pressures for building in growing areas and rural depopulation. (European Telework Online 2000c; Rönkä 1994.)

Today it is generally accepted that the volume of traffic and amount of traffic apparatus will increase and increase in future. Commuting forms a notable part of those traffic and needs. However, if people worked more near home or at home it would reduce the traffic between home and the office. For example, studies in Stockholm indicates that only 6 to 8 per cent reducing of traffic during morning and evening rush hours would reduce also the need for expansion of the traffic systems in future. (Engström & Johanson 1998: 135, 140.) The decrease in amount of traffic would also save energy, reduce traffic jams and improve the quality of air especially if decreasing will occur in peak hours. (McCloskey & Igbaria: 1998: 340; Rönkä 1994: 3, 13, 51 – 52; Engström & Johanson 1998: 140.)

Engström and Johanson present a theoretical claim, that by teleworking one day per week, the trips will decrease 20 %. It requires that everything else will stay unchanged. However, it is probable that something else will happen. People may also to travel more if they can do their work from different places. (Engström & Johanson 1998: 140.) The best result concerning the influence of telework on environment can be achieved in the areas where distances between home and working place are long (Rönkä 1994).

2.2.4 *Technical Preconditions*

General technical and software development can be considered in this connection, too. As mentioned before, information technology is needed to support communication between the people and to move the materials to the working place. (Dangelmaier, Kress, Wenski 1997: 129.) However, there is one role more that is not so often examined. Technology can also be used as a management tool for monitoring. (Olson 1989: 334.)

Whatever the role of information technology would be it can be seen only as an instrument that supports telework. But also telework supports the use of technology. The possibilities and threats depend on how they are used. (Araújo 1998: 60) Technological development progresses quickly nowadays, especially communication technologies. There are many possibilities to choose communication method depending on needs. People can choose either synchronic or asynchronic connections and distance between members is not so meaningful. The concept of presence changes to the concept of telepresence. (Engström & Johanson 1998: 131 - 132.) Decreasing costs of computers and networks enables exchange of data, information and knowledge regardless of distance (Davenport & Prusak 1998: 18).

Pekkola states that the use of information and communication technologies is precondition for telework (Pekkola 2002: 100). Easier interfaces in future will also facilitate teleworking (Hanhike et al. 1998: 96) by providing usable teleconferencing systems with low technical and economical requirements, for instance. According to Jari Sikanen, representative of Polycom teleconferencing systems from Xenex, videoconference devices for workstation are good enough in person-to-person meetings nowadays. However, more sophisticated systems are needed with more complex presentation material and conversations with more than two people from different places. (Karvonen 2002.)

Also security systems have evolved to consider teleworking. For example, there are firewalls that make possible to divide working and free time connections to different VPN tunnels despite of simultaneous use. (Karhu 2002.) Even though there are new quite effective technologies to communication available, Davenport and Prusak remind

that it is useful to use multiple channels for knowledge transfer. Different media reinforce each other. (Davenport & Prusak 1998: 159.)

Soon, it is also possible to connect a teleworker's telephone to be as a part of organisation's telephone network (Etätyöntekijä pääsee vaihteeseen IP:n avulla 2002). Meanwhile, it is possible to drop a telephone and include them in personal computers as a program. VoIP-telephones have been implemented by this way. By using this method internal phone calls of the organisation are possible always when the computer has been connected to the company's IP network. (Lehtinen 2002.)

Also different kinds of wireless networks are developed quickly nowadays. It is more and more possible to work place independently and use e-mail and worker's own materials from organisation's network. Possible solution can be WaveLAN or GPRS technologies that enable mobile working. (Saure 2002; Kilponen 2002.) A problem is that the development of networks occurs mainly in population centres while rural areas easily drop behind the development.

2.3 Instrument for Management

Stephen P. Robbins and Mary Coulter define management in their book "Management" in the following way: *"The process of coordinating and integrating work activities so that they're completed efficiently and effectively with and through other people."* (Robbins & Coulter 1999: 8). Thus, managers are people who plan, organise, lead and control functions in the organisation and the objects of their actions are work of the other employers. (Robbins & Coulter 1999: 8 - 9.)

Teleworking can be used to management in several levels: government or even EU, organisational and individual. From now on, management is considered in organisational level because it is a central factor while discussed teleworking in the organisation. The use of telework in management can be seen from two viewpoints: 1) telework can be a tool for supporting an other management method like human resource management (HMR) or 2) telework can be decided to use and other management methods are used to support it. (Limburg 1998: 102.) The use of telework for supporting other management methods or goals is discussed earlier in this chapter. Next, the

possible means to supporting telework will be concerned. Changing to teleworking is a process, which requires considering of tasks, communication practices, the role manager and other changing matters like salary and agreement.

Implementing telework

As described earlier, teleworking is usually connected one way or another to the individual factors like the worker's the life situation or duties. Therefore, it could be a *tool for personnel management* like hiring and motivating. (Hanhike et al. 1998: 118.) Because the reasons for teleworking often come from individual needs the adoption of telework occurs as an unplanned bottom-up process (Ruppel & Harrington 1995: 99). The worker suggests teleworking and the manager either accepts or rejects it. Although telework has positive consequences for the organisation also, its systematic applying is unusual. Meanwhile, it requires reorganisation of work processes that may be difficult. (Pekkola 2002: 24.) However, decrease in costs, faster process, welfare of the staff, better quality and productivity can be achieved by successful reorganisation. (Hanhike et al. 1998: 110; Pekkola 2002: 96.)

Different kinds of concepts can be used as a model of change process. For example, the model of learning organisation is a possible one. However, there can be found some facts that have to be considered anyway. When implementing teleworking both existing, potential teleworkers and every other employees have to be considered and heard because teleworking of some people may and probably influence in other workers' situation, also. The more staff is considered, the better will the results are. (Bergm 1998: 86; Davenport & Prusak 1998: 164; Limburg 1998: 97.) An important task of the implementing process is to recognise the real reasons for telework. Is it wanted because of workers' needs or because of better performance, for example. When the acceptable reasons have been found, the readiness to the change will increase. Secondly, it is necessary to consider for whom and for what tasks it is suitable. Addition, enough time has to be allocated for the implementing process. Too tight schedule is a typical problem during the introducing process, which increases frustration. (Hanhike et al. 1998: 106, 109 - 112.)

Teleworkable Tasks

Most "Teleworkable" tasks are autonomous, time flexible and concentrated informational work that does not require contacts with hierarchical chief or lot of feedback (Araújo 1998: 55). Limburg states "*The more tasks are dependent in time and space, the more effort it would take to introduce teleworking*" (Limburg 1998: 98). In addition, transportability of the needed material and results as well as coordination utilities are prerequisite of teleworking. (Brännback et al. 1998: 1.)

It is also necessary to consider how much communication is required in the accomplishment of the tasks. Salaff, Wellman and Dimitrova (1998: 12, 29) examine different situations from the viewpoint of relations and communication. They occur either between workmates or between staff and customers. Work groups can be either dense, bounded groups or unbounded networks and they can also be something between those extreme cases. The modes of communication, working and social relationships vary according to the structure of the group and teleworking in tight bounded groups may be difficult. These groups and the atmosphere of the entire workplace influences in work rhythm and attitudes. According to Inkeri Ruuska, groups can be formed also between people from different organisations. Human has a natural inclination toward groups. (Schakir 2002a.)

Because teleworkable tasks are independent of time and place the first teleworkers in the organisation should be self-motivated, enterprising spirit, courage and enthusiastic to telework. Those characteristics are required from the teleworker because there are not the colleagues who could support them. Courage is expected from the pioneers who implement new working methods because some envy may exists on the part of others. The first teleworkers can gather experiences and develop teleworking methods that will also influence on attitudes of the others. Later on, self-motivation is important as well as commitment to the organisation and work. Teleworking also requires good understanding of organisation and its aims. All of the staff must have same vision about future development. (Bergum 1998: 84; Hanhike et al. 1998: 103, 105 - 107.)

Role of Manager

In addition to the teleworkers and tasks, it is also necessary to consider the role of the manager. Hanhike, Immonen, Kanerva and Luukinen (1998: 105, 109) define that the role of the *telemanager* is not as an overseer but a giver of possibilities. If telework is promoted the support and encouragement of the superior are needed. The manager has to give feedback, be available and communicate well and appropriately. While considering virtual organisations, Grimshaw and Kwok (1998: 109) describe the manager as a team leader who coordinate, provide directions and focus instead of dictating. Bergum (1998: 78) says that in Nordic working life manager is more like a coach who specifies goals and visions. Then the workers can define themselves where, when and how they do the work.

Distance supervision may be more problematic than supervision in the office but it depends on the culture of the organisation, the volume of teleworkers and the amount of teleworking days. (Bergum 1998: 89.) Bergum says that control of the teleworkers is less problematic while more challenging are adequate informing, community, democracy, understandable and sufficient communication, coordination, motivation and common view on corporate culture. Therefore the remote manager has to define even better visions, norms and the goals of organisation and she also has to organise her works more. In addition, the telemanager has to consider how the change of knowledge and personnel development can be assured and how to provide more feedback for the teleworkers. Thus, the telemanager needs better understanding of “soft” and human aspects of management. Altogether, more systematic planning is needed. (Bergum 1998: 75, 79, 87; Hanhike et al. 1998: 105, 109.)

As mentioned before, a teleworker must have good understanding of the organisation and its aims while all of the staff must have the same vision about the future development. There has to be also open atmosphere and common rules and norms, which require adequate communication in the organisation. Face-to-face meetings enables learning, social communication, solving difficult issues, exchange ideas and experiences. (Bergum 1998: 75; Brännback et al. 1998: Davenport & Prusak 1998: 159; Hanhike et al. 1998: 103; 1; Salaff, Wellman & Dimitrova 1998: 21 - 23.)

Communication helps the manager to obtain information about the teleworker's welfare. Bergum recommends that the manager contacts the teleworker frequently without any special issue. The motive of the contact is only to listen for the feelings of the teleworker and notice possible weak signals that may express the problems of working like too high workload. (Bergum 1998: 84 – 85.) While telework is applied all communication cannot be realised in face-to-face communication and the manager has to use more technologies to communication. Thus, a manager must have positive attitude to the use of information and communication technologies. (Bergum 1998: 87; Hanhike et al. 1998: 104.)

A challenge of the telemanager is community in the organisation. It may decrease when teleworking increases. In addition to common meetings, different kinds of cultural or sport activities can be a way to manage it. (Bergum 1998: 81.) The manager has to try to make teleworkers visible in the organisation. That can be achieved by informing of teleworkers' visits at the office, their tasks and good results. Those factors increase trust between people and help the teleworker to feel welcome when visiting at the office. (Bergum 1998: 84.)

Trust

Telework is not visible and the results will be appeared after a delay. (Bergum 1998: 75, 79; Salaff et al. 1998: 28.) Therefore, teleworking is more complicated in the cultures where it is important to be visible (Araújo 1998: 66). The manager has to trust the teleworker because the manager has the most important role in creation of trust in the organisations. She has to show that she trusts the staff. After that the personnel also start to trust to the manager. The manager can increase trust by handling equally the staff and supporting the education and development projects, for instance. The actives to create trust have to be real, not only words. It is long time process and all development can be lost because of one mistake. When trust is created it will also benefit the economic of the organisation because the staff want to work for common success. (Hanhike et al. 1998: 104; Lehto 2001.)

However, a study reveals that need of trust is not more critical in teleworking than in normal working. In the study trust was considered from the employees' perspective,

which may explain the different result. Sandy Staples assumes that it may be due to more independent nature of teleworking. Because the teleworker has fewer interactions with the fellow workers and, they also impact her less. (Staples & Ratnasingham 1998:136 - 137.)

Contract for Telework

Because the central idea of telework is often flexibility of time and place, determining the value of work by used time is not appropriate. Instead, the salary can be based on the amount of the tasks, quality and results. The new division of responsibilities and the developing of pay policy may also support the motivation of the teleworkers. (Hanhike et al. 1998: 102, 104; Teo et al. 1998: 342.) The results of Finnish Working Life Barometer in 2001 indicates that Finnish employees' wage is increasingly based on the quality of work and the results of the group (Työministeriö 2001).

As mentioned before, unestablished practice of agreement of telework may be an inhibitor of its implementation. However, in Finland the employment contract is not problem for teleworking. There is not problem between Finnish Acts and teleworking. For example, employer is responsible for ergonomic factors of the working environment. Only the Working Hours Act is not in force unless employer can control working time and its statutory breaks. The main point in the contract of teleworking is voluntariness and high work ethic. Also from this viewpoint, it is recommendable that the employer covers the costs of equipment and telecommunication connections needed in teleworking. (Pekkola 2002: 69, 230 - 231; Sundholm 2002; Tietotekniikan palvelualan työehtosopimus: Etätyötä koskeva ohjeistus 2001; Työsopimuslaki 2001.)

After telework is implemented the arrangement should be evaluated after three to six months and yearly in the future. During the evaluations, modifications, and improvements can be agreed. Certainly, changes can be performed between the evaluations also. (Bergum 1998: 80 – 81.)

In summary, it can be stated that quite many factors have to be considered while implementing telework: changes in the division of tasks, the role of manager, salary systems and common practices. After starting telework, it may be useful to have

discussions about this flexible work arrangement in the organisation. The issues discussed can include communication practices, information security, occupational safety matters and scheduling, for example. The discussion or training will be more important if teleworking has not arisen from the workers. As well as the future teleworker, the future telemanager may benefit from training. It may help her to minimise possible problems and to maximise advantages. (Teo et al. 1998: 341.)

3 PROBLEMS AND RESEARCH DESIGN

3.1 Organisation Description

3.1.1 *University of Jyväskylä*

The development of the University of Jyväskylä started in 1863 when the first Finnish teacher training seminar was established. It developed gradually into institute of higher education and finally into multidisciplinary scientific university. Currently, the University of Jyväskylä is the fifth largest university in Finland. It has nearly 15 000 students and over 2 000 employees. (Jyväskylän yliopisto 2002b; Jyväskylän yliopisto 2002d.)

The key elements of the university are man, nature, and technology and the main missions are the searching for truth, the production and spreading of new information and the increasing and reforming of culture heritage. The aims are possible to achieve by successful research. Especially, the university tries to promote the well-balanced interaction of human, technology and nature and develops human technology. (Jyväskylän yliopisto 2002f; Jyväskylän yliopisto 2002a.)

The flexibility of operations and structures is stated to be important characteristics because of the continuous development in science community and the surrounding society. In the future The University of Jyväskylä wants to be widespread and high quality science university. Quality basic know-how and cooperation between different fields are characteristics. The university wants also to be as a strong social opinion-leader, a part of European education market and an international science community. (Jyväskylän yliopisto 2002a.)

To pursue the aims the university has to invest in the quality of its main missions that have strong relationship to research. Quality research requires quality people and, therefore, human resources are the most valuable resource of organisation. The University of Jyväskylä will improve its human resources by improving its status in science society, ensuring open communication culture and quick communication, hiring skilled labour and developing the organisation culture where people respect each others,

are motivated and have good ability to work. All these have to be achieved economically. (Jyväskylän yliopisto 2002a.)

There are seven faculties at the University of Jyväskylä. In addition, there are also ten separate institutes. The faculties and their departments are presented in Table 7 which shows the amounts of the educating people and students. 36 % of staff are teachers, 21 % are researchers and 43 % is included in the other groups of the staff. (Jyväskylän yliopisto 2002c; Jyväskylän yliopisto 2002d.)

3.1.2 Personnel Policy in University of Jyväskylä

Management by results is a normal management method in the University of Jyväskylä and it is intended to expand an encouraging wage policy, too. The feeling of community is achieved by fair listening of all employees, open and fast communication. Team organisation is a suitable working method and know-how of workers is critical. Especially, attention is paid to support creativeness and sufficient time for research. Because people are the central resource of the university, it is important to ensure their welfare. This is tried to achieve by adequate amount of skilled employee and fair work division. Also the balance between working hours and leisure time is significant. Situation is estimated regularly. (Jyväskylän yliopisto 2001a.)

TABLE 7. The number of teachers in departments (Jyväskylän yliopisto 2002e; Lyytinen 2002)

Faculty (Amount of students 1 January 2002)	Department	Number of teachers
Faculty of Education (2 291)	Department of Special Education	22
	Department of Education	13
	Department of Teacher Education	64
	Department of Early Childhood Education	24
	Teacher Training school	96
Faculty of Social Science (1 793)	Department of Social Sciences and Philosophy	39
	Department of Psychology	26
Faculty of Humanities (3 936)	Department of English	11
	Department of Scandinavian Languages	10
	Department of Romance and Classical Languages	9
	Department of German	9
	Department of Finnish	11
	Department of Musicology	16
	Department of History	11
	Department of Ethnology	4
	Department of Literature	7
	Department of Communication	19
	Department of Russian	6
	Department of Art and Culture Studies	9
	Centre of Applied Language Studies	1
	Department of Biological and Environmental Science	40
	Department of Physics	30
Faculty of Mathematics and Natural Science (2 421)	Department of Chemistry	31
	Department of Mathematics and Statistics	32
	Department of Health Sciences	23
	Department of Biology of Physical Activity	15
	Department of Physical Education	23
Faculty of Sport and Health Science (1 275)	Department of Social Sciences of Sport	6
		39
Faculty of Business and Economics (982)		
Faculty of Information technology (1 661)	Department of Computer Science and Information Systems	41
	Department of Mathematical Information Technology	32
Institute of Educational Research		1
Chydenius Institute		11
Open University		77
Continuing Education Centre		XX ¹⁾
Language Centre		23
	Total	831

1) Missing information

3.1.3 Job Description of Educating People

Education personnel have 1600 working hours per year. Working hours is controlled by the accomplishments and working results, not by time. However, it is possible that 1600 working hours is not the amount of work. (Opetusministeriö 1998.) There are suspects that teachers can not estimate real working hours exactly for different works beforehand (Opetusministeriö 1998). Addition, according to the recent study of Finnish Union of University Professors 2 178 hours per year is the average amount of professors' working hours (Professoriliitto 2002).

Teaching and research have to be arranged flexibly so that employees can focus them sufficiently. There is a research period that can be divided into two periods. Attention has to be focused on separating free time from working time, also. Teaching has to be based on research and the educating people should be encouraged to improve their teaching and studying methods. (Opetusministeriö 2000; Jyväskylän yliopisto 2001b; Opetusministeriö 1998.)

The work of educating people can be divided into five sections (Opetusministeriö 1998):

1. Education
2. Research
3. Artistic activity
4. Societal services
5. Supportive activities

Four of these (1, 2, 4 and 5) are mentioned also in the ethical instructions for professors. (Professoriliitto 2001).

3.2 Problems and Research Approach

As mentioned in the strategy of the University of Jyväskylä, the goal of the university is a promotion of the well-balanced interaction of human, technology and nature, and the development of human technology. Also, the flexibility and high quality of operations and structures are goals. High quality of activity requires skilled people that are the most valuable resource of the university. The quality people can be hired and kept easier if the university has good status in science society and the organisational culture is motivating and enables good ability to work. In addition, this all has to be done economically.

Teleworking is a possible manifestation of those principles because by telework quality people can be hired from larger geographical area. Flexible ways of work arrangement may also improve the image of the university and provide a fringe benefit that attracts professionals. Moreover, large-scale implementation enables reductions in costs of premises. Furthermore, many principles of the personnel policy of the university can be achieved or supported. These principles are: management by results, open and fast communication, team organisation, creativeness, welfare of the staff, balance between working hours and leisure time, and sufficient time for research, for example.

The attitudes and beliefs to telework are related to the working culture that is influenced by the culture of the country. The attitudes and beliefs of the computing people have been examined in some countries including Finland. However, the results cannot be directly applied to telework of the educating people in Finland.

Because the University of Jyväskylä is a potential organisation to use telework it is also a good research object when the attitudes and beliefs of the staff in telework are examined in Finland. The attitudes and beliefs towards telework were chosen to be the first objects of the examination because voluntariness is a precondition of telework. In addition, this study focuses only on educating people because they are the largest individual group of the staff, and because they are knowledge workers who are potential for telework. However, it is necessary to remember that the other groups of the staff have also to be considered while telework is implemented because teleworking influences work of the other people. This study investigates the educating people of the

university, and more exactly the educating people in the Department of Computer Science and Information systems. When similar surveys are performed in other departments, the results can be compared and wider conclusions can be formed.

Based on the aims of the university and the theoretical background four main questions were defined for the study:

- Q1: What are the factors that drive or restrain telework of the educating people?
- Q2: How the educating people expect telework to influence their work?
(Possibilities and threats)
- Q3: How the attitudes and beliefs of the educating people differ from the results of the earlier studies?
- Q4: How telework could be adopted at the department?

Based on the questions it is possible to create a hypothesis how telework can be used to arrangement of work of educating people at universities and the hypothesis can be tested in research.

3.3 Research Design

The Department of Computer Science and Information Systems was chosen as a target because the teachers in the department probably have similar technological skills as the computing people considered in the other studies. Moreover, there was some interest to teleworking and, thus, the department may be a potential pioneer in implementing telework in the university. The study is a quantitative case study, which uses survey method (Yin 1994: 9). The survey is a model of an inquiry, interview or observation where the material is collected by a standardised way (Hirsjärvi, Remes & Sajavaara 1998: 189). The survey enables a large sample and many questions. It is effective because the results can be analysed by statistical methods and the research timetable is easy to plan. However, survey has its limitations, also. The interpretation of the results may be difficult and the researcher does not know how seriously the questionnaires are completed. (Hirsjärvi et al. 1998: 191.)

The choosing of one working community to be as a object it is possible to perform an overall study where the whole population was tried to examine (Hirsjärvi et al. 1998: 179; Niemi & Tourunen 1996). The sample may enable the generalisation of the results to the educating people at the universities who have good computing skills. Possibly, some results can be generalised more widely.

Based on the literature review, the research was decided to have two different parts. First, the interests and possibilities of educating people to telework were studied by a questionnaire and, second, the common attitudes in the departments were examined by a questionnaire for administrative people. The administrative inquiry was aimed to give results that can be compared to the results of the survey of the educating people.

3.3.1 Survey for Teachers

Based on the literature review it was possible to suppose that there will be some factors that influence people's attitudes to telework. The factors can either drive or restrain teleworking. In addition, the factors can be either existing elements or they can be beliefs about the consequences of telework (possibilities and threats). Also, possible background factors, like age, sex and place of residence, influence the opinions and they are required also to investigate.

The use of the structured questionnaire for the educating people enabled the interviewing of the whole population because it enables many questions in short time. The survey was implemented as a one-time telephone survey where all educating people were tried to reach. Although neutrality of interviews is questioned, it is experienced to be a reliable source of information. (Fontana & James 2000: 646.) In the interviews of the teachers better neutrality was achieved by pre-established questions that were presented according to the script. The use of telephone was reasonable because it produces better response rates compared to mail survey, which usually produces low response rate (Floyd & Fowler 1988: 48; Hirsjärvi et al. 1998: 192). Same kind of response rates can be expected in e-mail survey, also. It was highly unlikely that all teachers would have been succeeded in collecting together to fulfil the questionnaires. In this situation, telephone survey was also very lower costs because all phone calls

were calls inside the university. It also enabled a quite short data collection period that was required because of timeline of the study.

Telephone survey was performed in two weeks at the turn of the June. Five phone calls were performed per respondent, if necessary. 23 people (59,0 %) from all 39 educating people of the department were reached and response rate was 100 % for reached people. In addition, the questionnaire was sent by e-mail to the respondents (11 people) who were not reached by phone. 6 questionnaires were returned (54,5 %) and the total response rate of the survey was 74,4 %.

The questionnaire for educating people consists of 127 questions concerning background factors (general, work, telework), driving and restraining factors, beliefs (possibilities and threats) and interest (the whole questionnaire is presented in Appendix 1). The language used was Finnish but also three questionnaire in English were sent. However, any of these questionnaires were not returned.

The questions were mostly structured because they are easier to compare (Valli 2001: 110) and enable more respondents. There were also some open questions, which enabled expressing opinions and ideas that were not considered in the structured questions. In addition, they were used to questions where more thorough answers were desired. (Hirsjärvi et al. 1998: 197; Valli 2001: 111.)

The structure of the interview was following. First, general background information (age, gender, place of resident, way to work, computing skills) and some information about current work (title, working years) were asked. After that the definition of telework was presented and the respondents were asked to assess her teleworking experience and the level of interested to the different modes of telework. There were also questions concerning communication modes used at work and the parts of work that the respondent would like to do by telework. Also, the respondent was asked to define the technologies she would need for teleworking and the desired amount and frequency to telework.

At the end of the questionnaire there were two tables that consisted of 27 questions about driving and restraining forces and 35 questions about beliefs concerning the

influences of telework (possibilities and threats). In the table there were used 5-point Likert scale (1 strongly positive, 5 strongly negative) that is typically instrument for these purposes (Valli 2001: 106). Addition there were "Hard to say" alternative that was possible to choose if the respondent could not answer or if the question was not applicable (for example, if the respondent does not have a family). At the end of the questionnaire there was free space for other comments.

3.3.2 Survey for Administration

Additional material was acquired by a questionnaire for people responsible for developing of education in the departments of the university (the whole questionnaire is presented in Appendix 2). The questionnaire was posted by e-mail to all 31 departments and five other institutes of the university. The criterion for the choice of the institutes was that there is at least one educating person. It was possible to answer by replying to the e-mail or printing and sending the questionnaire by internal post. The use of e-mail was acceptable because the receivers use e-mail in their daily communication. E-mail also enabled fast process. The response rate was 25 % (9 returned questionnaires) and, thus, it can be used as guiding material, while generalisations and conclusions are not possible.

The questionnaire contained mainly open questions because the aim was to examine the attitudes, beliefs and atmosphere regarding telework in the departments. First, general background information like the amount of educating people and the whole staff was asked. Thereafter, there were questions about current stage of teleworking and earlier considerations about telework. Finally there were 22 questions about attitudes and beliefs to telework and a space for free comments.

3.3.3 *Statistical Methods*

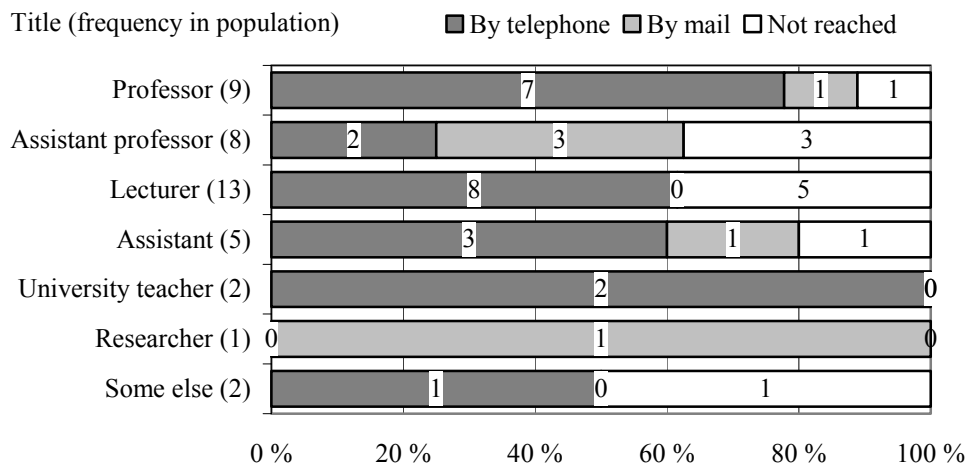
The material of the survey for the education people were mainly scale (e.g. age), nominal (e.g. residence, title, Internet at home, workroom) and ordinal (Likert scales) measures. However, the Likert scale is generally processed like interval scale (Erätuuli, Leino & Yli-Luoma 1996: 38 - 40) and, thus, more statistical tests can be performed on the basis of it (like mean and correlation coefficient = r_{xy}). Also, in this study the means of measures are used for comparison, but also typical numbers (mode, median, Spearman's rank correlation coefficient = r_s) of ordinal measures are presented.

4 RESULTS

4.1 Results of Personnel Survey

The total response rate of the survey was 74,4 % and consequently the results are generalised to the whole department quite well. The total sample was 29 respondents (23 by phone survey and 6 by mailed survey). The two returned questionnaires of the mail survey had been filled incompletely. The cases were left out while the results of these questions were considered and, thus, the sample is less than 29 in some results. The incomplete questionnaires were considered when it was possible.

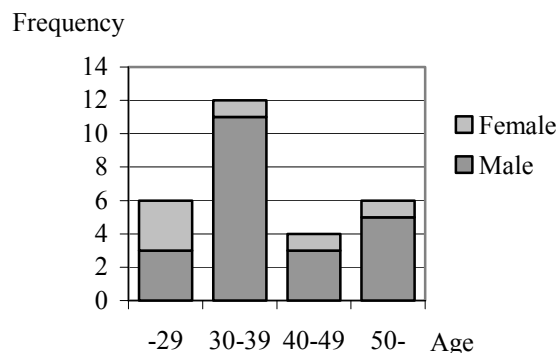
The results (minimums, maximums and means) of the phone survey and the mail survey were compared and they correspond to each other quite well. But there were some differences and those results are processed apart from each other and they are discussed in the next paragraphs. At least 50 % of the members of the occupational groups were achieved (PICTURE 1). Thus, the sample is quite representative.



PICTURE 1. Staff and the survey method

4.1.1 Demographic Characteristics of Respondents

Age, sex, residence, working room. The distribution of the age and gender are presented in Picture 2. The ages varied from 25 to 56 years (one missing case) and the mean was 38,18 years. The most respondents were males (79,3 %). The result reflects Pekkola's supposition that future potential teleworkers are still studying in the age fewer than 25.

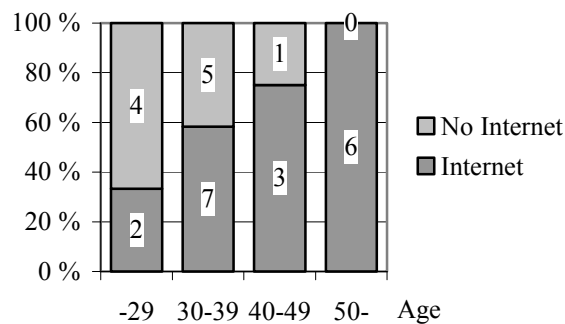


PICTURE 2. Age and gender of educating people (N=28, 1 missing case)

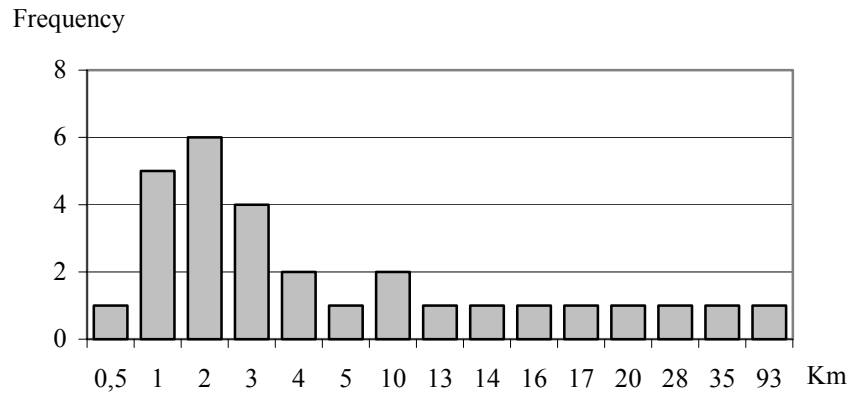
Over 80 % of the staff lived in some population centre (TABLE 8) and about half of all (51,7 %) had a working room at home. The workroom was more common within workers outside of the city. 65,5 % of the respondents had an Internet connection at home and almost all of them (94,7 %) used it themselves. However, the Internet connection at home was more common with older respondents (PICTURE 3), males (male 74 %, female 33 %) and the workers with a workroom (86,7 % with workroom, 42,9 % without workroom). As it can be seen from the data in Table 8, the Internet connection is more common outside Jyväskylä. There was also correlation between Internet connection at home and the length of the job contract as well as the length of teaching period. Both correlated positively with age. However, it has to be noted that the sample is quite small and the proportions may vary a lot if only one case will change.

TABLE 8. Location of residences and Internet connections

Location of residence	f	%	workroom at home (%)	Internet connection at home (%)
Population centre of Jyväskylä	19	65,5	31,6	57,9
Population centre of other city	0	0,0	0,0	0,0
Population centre of municipality	5	17,2	80,0	80,0
Rural area	5	17,2	100,0	80,0
Total	29			

**PICTURE 3.** Age and Internet connection (N=28, 1 missing case)

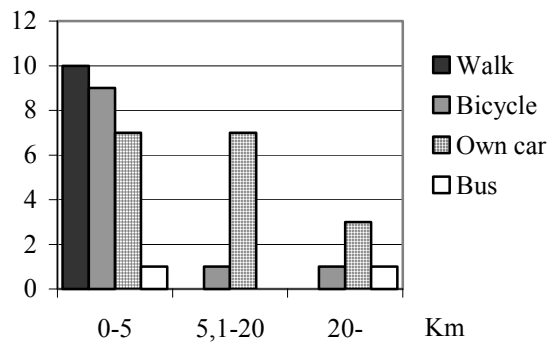
Daily way to work, commuting means. The respondents were asked to define their daily way to work and they also chose one or more commuting means which they typically use. The majority of the educating people of the department lived near the working place (PICTURE 4). 65,5 % of the respondents lived within a radius of five kilometres from the office. Although they lived near the office, the most general mean to commute was person's own car whereas carpools have not gained popularity at all (TABLE 9, PICTURE 5). Thus, it can be deduced that increase in telework would reduce driving among the respondents.



PICTURE 4. Daily way to work (N=29)

TABLE 9. Usual commuting means (several alternatives can be chosen, N=29)

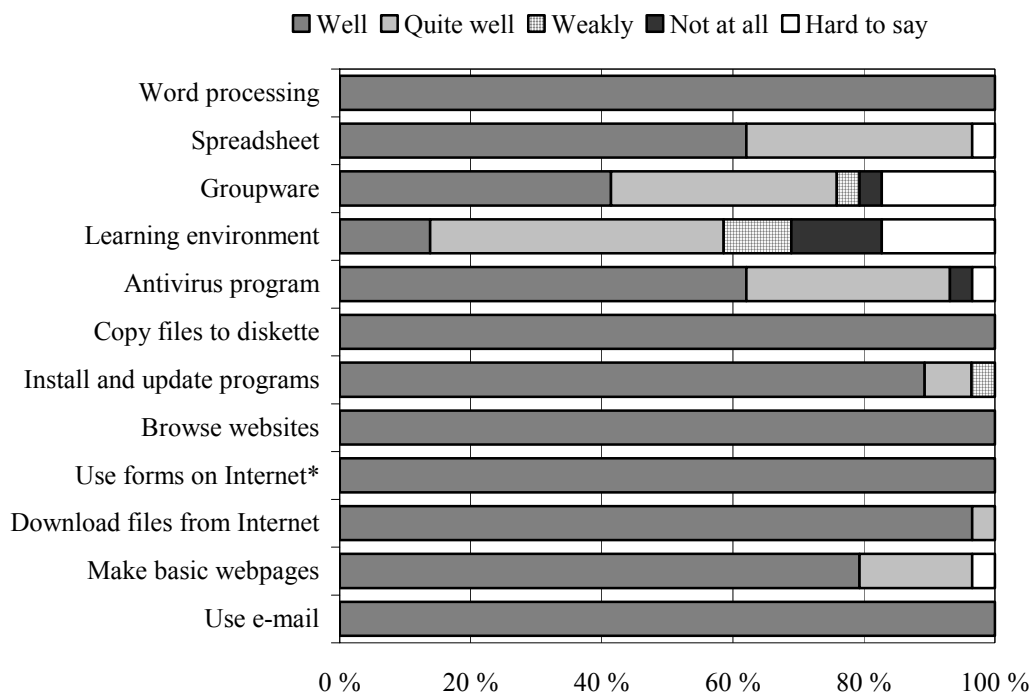
Commuting mean	Yes (f)	Yes (%)
By own car / motorcycle	17	58,6
By other's car / motorcycle	0	0,0
By train	0	0,0
By buss	2	6,9
By bicycle	11	37,9
By walk / run	10	34,5



PICTURE 5. Daily way to work and commuting means used mostly (several alternatives could be chosen, N=29)

Information and communication technology skills. The respondents were asked to estimate their information and communication technology skills (PICTURE 6). Altogether, the respondents had quite high ICT skills, as expected, but it is noteworthy

that there were most uncertainty with use of groupware and learning environments. While teleworking these software could be the most useful programs in addition to e-mail, which makes teleworking more fluent. A reason for uncertainty may be the minor use of the programs. Probably, they have not been necessary before, but if the university changes towards into virtual learning and working environment they may be essential tools in future. However, only few of the respondents defined their skills as "Weak" or "Not at all" the improvement of the skills could decrease work related stress, increase work enjoyment and facilitate the introduction of new educating methods. However, the skills of the educating people at the department are generally very good and it can be supposed that they will learn the use of new programs easily.

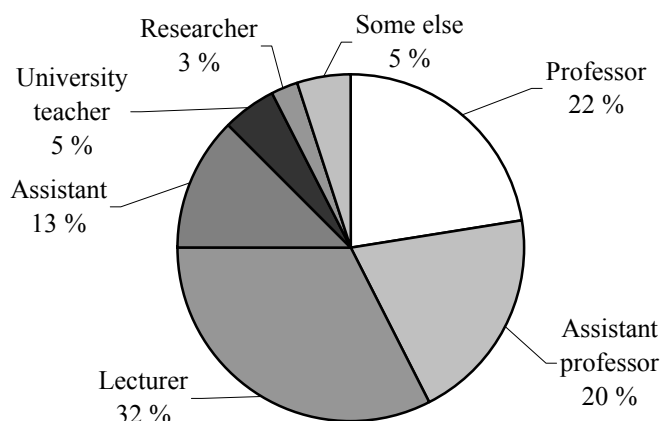


PICTURE 6. ICT skills (N = 29, * 1 missing case)

There occurred distinction between the phone and mail survey with the results concerning the use of spreadsheet and antivirus program skills. The skills were estimated more critically in the telephone survey than in the mail survey. All the respondents of the mail survey estimated that they can use spreadsheet program well where as, 43,5 % of the respondents of the telephone survey answered "quite well" and one respondent chose "Hard to say". Due to the small sample the differences can be

coincidental or it may be consequence of better possibility to think what is spreadsheet in the mail survey. Similar difference was between the answers to antivirus program skills.

Title, Worked at JYU, Worked as an educating person. The three largest occupation groups of educating people in the population were lecturers, professors and assistant professors (PICTURE 7). They formed 74 % of all educating people. The average length of job contract with the university was 8,5 years and the mean of teaching years was 9,1 years. There was a strong positive correlation (0,8) between the age of the respondents and the length of the job contract with the university as well as between the age and the length of teaching (0,8) (PICTURE 8).



PICTURE 7. Occupation groups of educating people in the population (N=29)



PICTURE 8. Working and teaching years proportioned to age (N=28, 1 missing case)

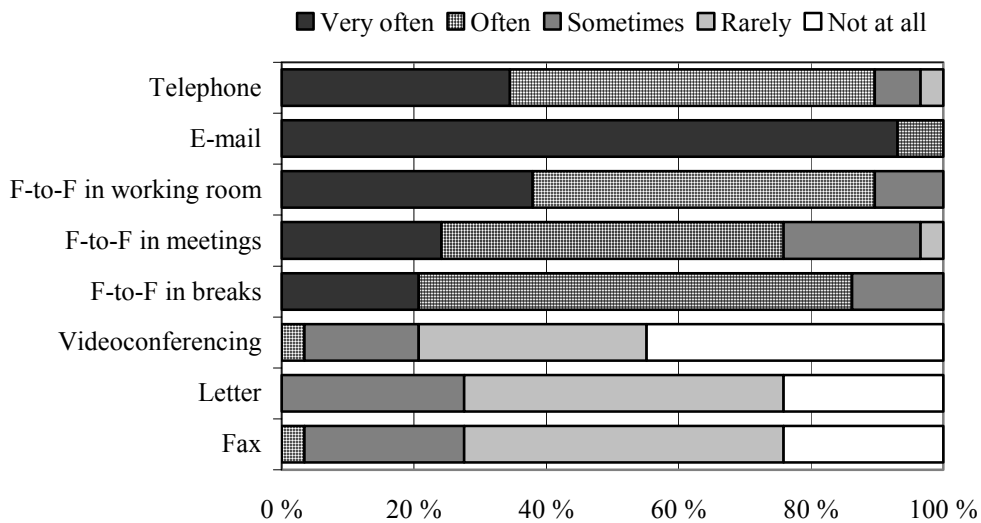
Use of computer, type of the computer, users of the computer. Because the sample is from the field of information and communication technology it was not surprise that all the respondents announced to use computer at their work. Most of them (86,2 %) had a desktop computer and 37,9 % of them had a laptop computer. 24,1 % of them had both. Except one case, everybody had a computer in his or her own use.

Job descriptions. Table 10 presents statistical information about job descriptions. Because the survey was carried out with educating people it is obvious that 100 % of the respondents answered that education was included in their work. Instead, the question concerning artistic work caused bigger variation. The definition of artistic work was unclear in the questionnaire and people understood it different ways. Some included work, like design of slides and other materials, to this division and the others understood it like real artistic work. Those respondents who replied to the mail survey answered "No" to the question about artistic work. This indicates that they had perhaps better possibility to think about classification and they included design of materials to the class of education.

TABLE 10. Duties included in work (N=29, * 1 missing case))

Work division	f	%
Education	29	100,0
Research	28	96,6
Artistic work*	12	42,9
Societal work	22	75,9
Administrative work	27	93,1

Communication means. Before the questions about telework, the respondents were asked to consider how much they use different kinds communication means during working (PICTURE 9). E-mail was the most used method. In addition, commonly used methods included telephone and different kinds of situations with face-to-face communication. Telephone and e-mail can be used equally during telework if there is necessary technology available but face-to-face communication changes more.

**PICTURE 9.** Use of different communication means (N=29)

Letter, fax, and videoconferencing were less used methods. It is probable that the popularity of letter and fax is decreasing whereas the use of videoconferencing may increase. Its success will depend on the development trends of ICT. Other mentioned communication means were travelling to meetings, spontaneous encounters in the corridors and also outside of the university (airports), phone conferences, text messages, and Viva, electronic conferencing system.

The other results were quite uniform between the telephone survey and the mail survey but there was a significant difference with the use of telephone. The respondents, who answered by mail survey, announced the use of telephone to be more minor than the others. The result can also indicate a reason why they were not reached by telephone survey. Perhaps they close the telephone more often to be able to work in peace or they simply are harder to reach by telephone because of meetings, for example. Thus, telephone is not so important mean of communication for them.

In this survey the assistant professors were the most hard to reach by telephone. Only 25 % of them were reached by telephone whereas 61,5 % of the lecturers and 77,8 % of the professors were reached by telephone. Amounts of the members of the other educating occupations were too small to do any conclusions from reachability by telephone.

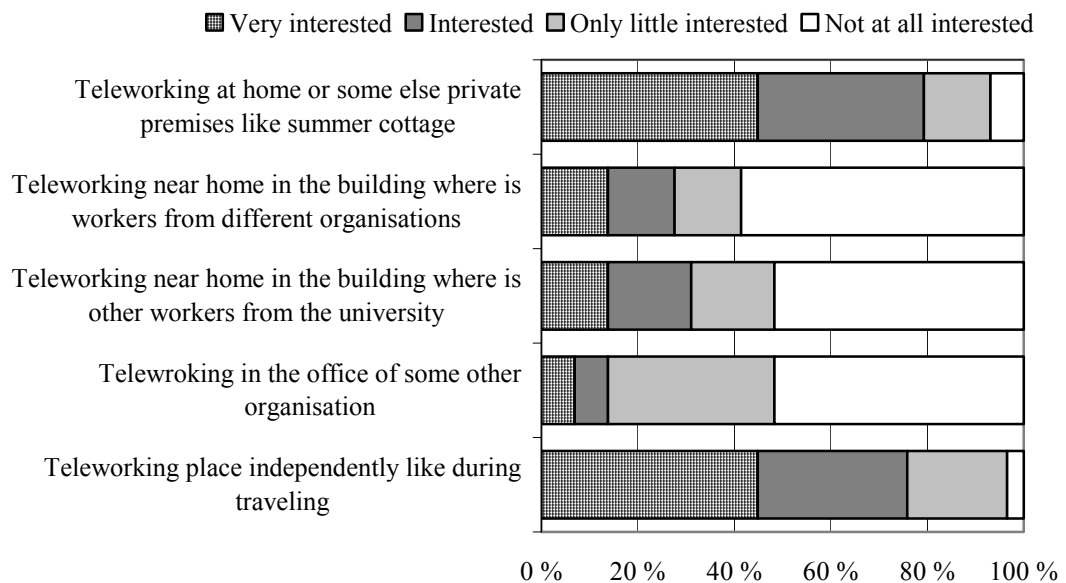
When the use of different communication means was compared with the titles of the respondents, little differences can be noticed in the amount of face-to-face communication that was emphasised slightly more by the professors. The result was expected and it can be justified with the professors' job descriptions that include a lot of communication both inside the university and with different interest groups outside the university.

The use of face-to-face communication in meetings was the only factor that was related with the age of the respondents. The respondents under 29 years old used less this mode of communication than was expected and over 50 years old respondents used it more than expected. 66,7 % of the over 50 years old respondents were professors. A possible explanation may be either different kind of job descriptions.

4.1.2 Teleworking

Teleworked before. 82,8 % of the respondents have teleworked before. There were only one occupational group where most of the respondents were not teleworked before: the assistants. However, the assistants have worked only a short time at the university (mean 1,3 year) and they were also quite young (mean 27 years). The working hours of assistants are also controlled by the contract.

Teleworking ways. The respondents' interest in different teleworking modes (PICTURE 10) were asked before their work descriptions but after all it seems that they considered their situation at JYU and also other current factors (like daily working way) when they answered it. In the results of nomadic teleworking and working at the office of other company were only small differences between telephone and mail surveys. However, the differences were not significant. They were mainly variations between the "Interested" and "Very interested" classes.

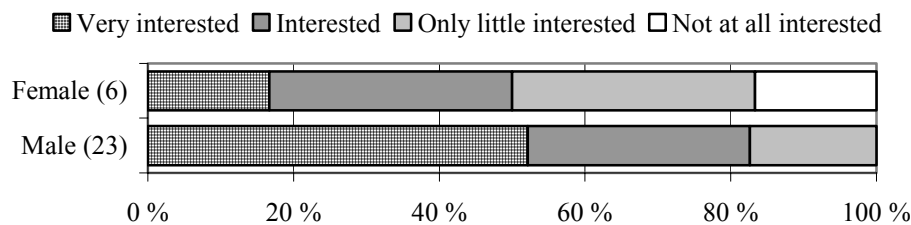


PICTURE 10. Interest in different teleworking modes (N=29)

The educating people of the department were the most interested in teleworking at home or in other private premises and teleworking place independently (nomadic teleworking). Based on the other answers and comments of the respondents it is possible to deduce that the reason for the popularity of home-based teleworking is the possibility to work in peace at home.

Instead, the reasons for the popularity of nomadic teleworking were not so obvious. The professors, assistant professors and lecturers expressed to be interested or very interested in nomadic teleworking, except three cases. The other groups of the respondents had too few answers to get relevant results. A reason can be that the professors have to travel a lot and that is why they have to work nomadic anyway. Another reason for the success of nomadic teleworking may be idea of working place

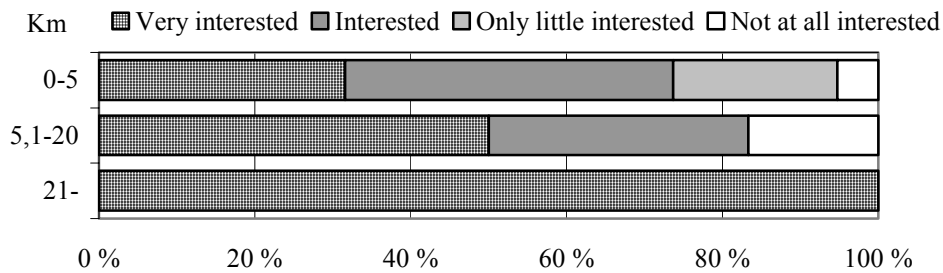
independently, which will enable working from trips also. However, when the answers concerning the interest in nomadic telework and the influence of the possibility to choose workplace were compared they did not correlate with each other ($r_{xy} = 0,07$). Instead, according to the results, the gender seemed to influence a little to the attitude to nomadic teleworking (PICTURE 11). The males were more interested in nomadic teleworking than the females. However, the amount of females was quite small in the study and reliable conclusions can not be made. But when the different kinds of teleworking modes are concerned together in Finland, it can be discovered that men telework more than women, as found in Finnish Working Life Barometer in 1997.



PICTURE 11. Gender and interest in nomadic telework (N=29)

The respondents were not interested in the telecentres and the satellite offices. It may be due to the short way of commuting. As mentioned before, 65,5 % of the staff lived within a radius of 5 kilometres. Thus, there would not be any advantages to telework in the telecentre because it takes same pains to commute to the university.

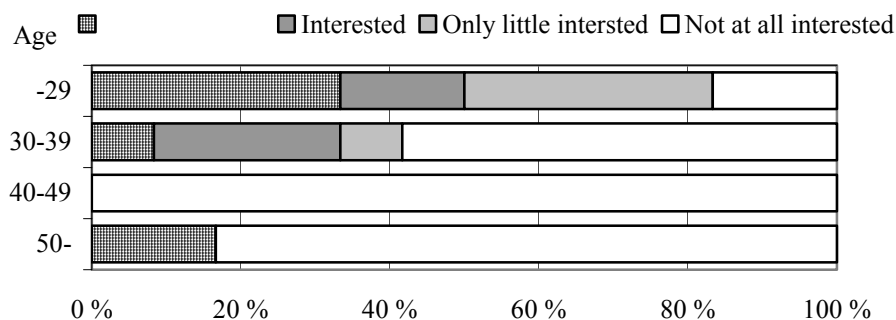
Instead, educating people with the long way to work (over 20 km) seemed to have higher than average positive attitude to home-based teleworking (PICTURE 12). Also the Spearman's rank correlation coefficient indicates that there is a weak correlation (0,32) between the daily way to work and interest in home-based telework. Based on the earlier studies it can be supposed that the correlation may be stronger if the sample included more respondents with long daily way to the office.



PICTURE 12. Daily way to work and interest in home-based telework (N=29)

Teleworking in the office of some other organisation were not considered as interesting. However, in two cases it was marked to be as "Very interested" and a respondent explained it by being involved in research that is done by working or observing in the other organisation.

When the ages and interests in different teleworking methods were compared, the only notable result was that the youngest people were more interested in telecentres than the older respondents (PICTURE 13). However, the statistical methods supported this conclusion only little: Spearman's rank correlation coefficient was only -0,21 and correlation coefficient -0,34. On the other hand, same kind result was possible to see when working years at The University of Jyväskylä and different teleworking methods were compared. The result can be explained by the correlation between the "Age" and "Worked at the university" ($r_{xy} = 0,80$). Instead, teaching years did not seem to influence on the interest in teleworking methods in this sample.



PICTURE 13. Age and interest in working in telecentres (N=28, 1 missing case)

The Existence of working room seemed to influence little on the interest in home-based teleworking. 93,4 % of the working room owners were interested or very interested in home-based teleworking where as only 64,3 % of without working room living people were interested in it. An explanation may be better possibility to separate work from the private life if workroom existence. Thus the conflicts between the family and work are can be minimised.

Tasks that would be like to do by teleworking. In the same question where the respondents defined, what their work includes, they answered which of these tasks they would like to do by teleworking. In education the most frequently mentioned group of teleworkable tasks was the planning and preparing of education, lectures and demonstrations. The other often mentioned group was reading and revision of students' reports and exercises. The willingness for teleworking with these two groups of tasks may be explained by the need for concentration that was mentioned in some cases particularly. It may be easier to work in peace at home than in the office.

Different kinds of communication with students were also mentioned to be like teleworkable educational tasks in some cases. However, there were also the answers where they were especially excluded from the possible tasks. This is similar to lectures and demonstrations, which were mentioned in three cases to be done by teleworking. One respondent explained the use of "telelectures" by the situation where the students and the lecturer have a distance anyway. When the students work in different cities, it is unreasonable to demand them to come to Jyväskylä for few lectures.

Almost all research would be liked to do by teleworking. The only exceptions were the tasks that simply could not be done by teleworking like discussions with groups and the collecting of material in libraries, for example. Some respondents stress the importance of peace of working in research. It was also said that research partners are in distance anyway and, thus, the place of working is not meaningful. On the other hand, there was a comment that the business trips force to do research by teleworking.

The respondents who defined artistic work to be a part of their job description included the planning and producing of different kind of materials in it. There was also a comment that the whole field of software business can be seen as artistic field. Most of

the respondents also wanted to do these tasks by teleworking. Although there was not any question about the reasons, peace of working was mentioned to be critical with the tasks.

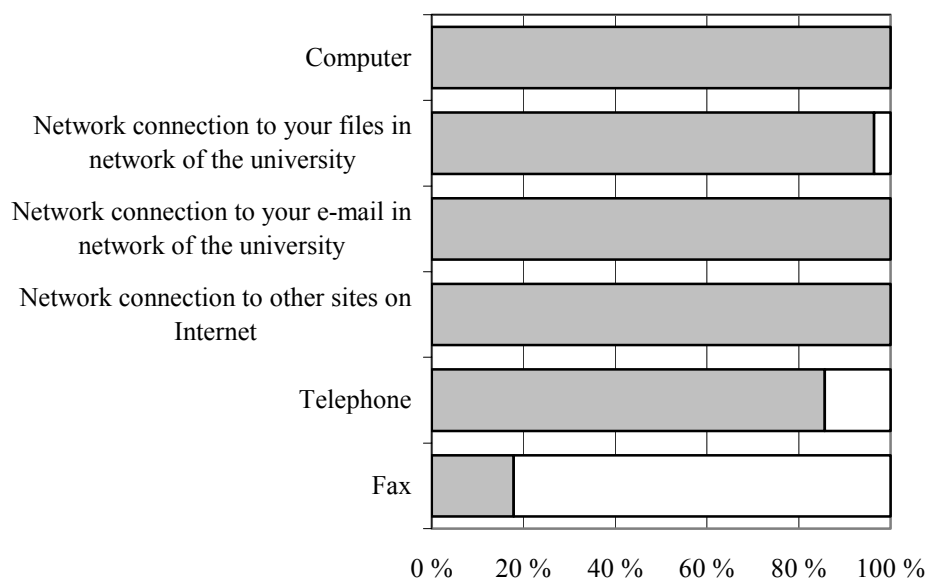
The results concerning the tasks of societal work were divided in two trends. 6 respondents (27,3 %) of 22 cases, who were reported to have societal work, did not want to do it by teleworking and the other (72,7%) wanted to do at least something by teleworking. The later group included four respondents (18,2 % of all respondents) who announced that they would like to do every societal work by teleworking. Typical teleworkable tasks were writing of articles and expert opinions and external publicity. The other often mentioned group of tasks was different kind of meetings and cooperation between different organisations. It can be questioned that there occurred differences on how the respondents defined teleworking and whether external meetings belong to teleworking. Thus, few respondents answered that most meetings have to be organised outside the university. In contrast, there were also comments that some opinions require communication in the university and that is why teleworking is not suitable method to do them.

Over half (51,9 %) of the respondents, who performed administrative work, announced that they did not like to do anything by teleworking. There were several reasons for that: it is not possible, tasks requiring group work, communication is needed for common understanding, administrative things are not wanted to bring home. Also the presence in some social situations were experienced to be important. Moreover, some respondents wanted to do by teleworking like planning, preparations and communication. The result supports the view of teleworkable jobs that are autonomous, time flexible, requires concentration, and that does not require lot of contacts with other people.

Technological methods needed for teleworking. After the question about teleworkable tasks the respondents were requested to define the technological methods that they would need for teleworking (PICTURE 14). Because the field is technically oriented and everybody uses computers in their own work it is obvious that everybody announced to need computers during teleworking. Similarly, a connection to Internet was needed. However, there was a different answer where the useless of Internet was

argued for impractical connections from abroad to the user's own files in the network of the university.

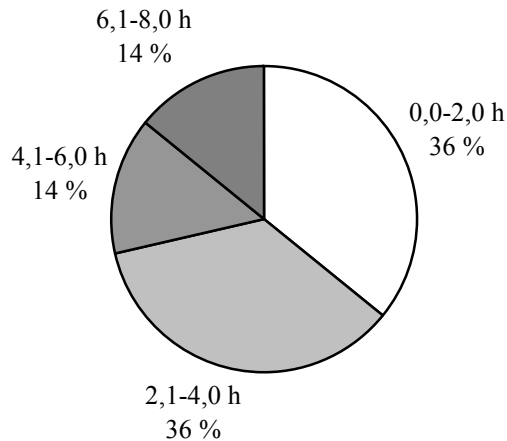
The lower need for telephone may be explained by the willingness to work in peace while teleworking. All, who did not need telephone, wanted to do planning, reading, preparation and research tasks by teleworking. Some of them announced also communication with colleagues and students such tasks but perhaps they will do it mostly by e-mail while teleworking. One respondent stressed the importance of telephone by stating that a Communicator will meet all the requirements of his teleworking. Mainly the professors and assistant professors needed fax. Some respondents added comments, which indicate that possibilities to telework will be better when technological development will progress.



PICTURE 14. Technological methods needed while teleworking (N=28, 1 missing case)

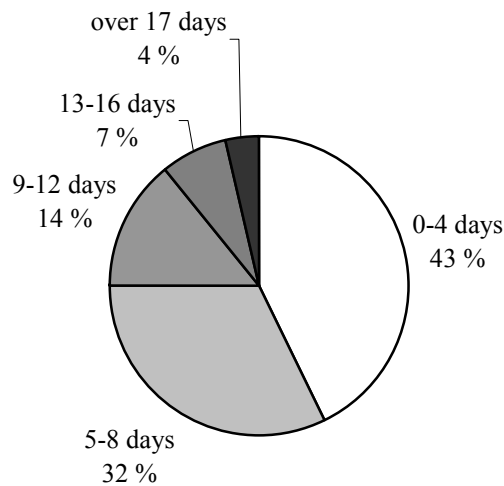
Needed connection time. If the respondent announced the need for network connection he was asked to estimate the needed network connection time (PICTURE 15). It is supposed that 8 hours is equivalent to a working day. The numbers may vary significantly depending on tasks performed in different days. When the respondents pondered the needed connection time, a part of them needed it only occasionally to check e-mail or retrieve materials. Their need for connection time was quiet small.

While others estimated that they need more connection time. The difference may be explained by the different tasks performed by teleworking.



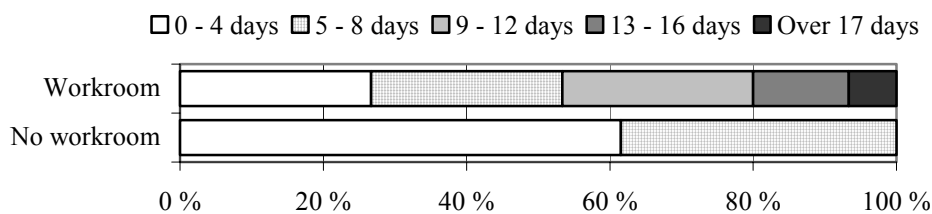
PICTURE 15. Needed connection time per teleworking day (N=28, 1 missing case)

Frequency of teleworking. The respondents were allowed to announce how often they want to telework by days per week or by days per month (PICTURE 16). 85,7 % defined the amount as days per week. In the analysis weekly amounts were converted in monthly amounts. All respondents wanted to telework and most of them wanted to telework only 1 to 2 days per week (0 - 8 days per month). There were lot of comments that amount of telework depends on situation. During lecturing period it is not possible to telework so much but during research period teleworking is useful. One respondent also said that it would be perfect for him to be present 3 to 4 hours per working day and telework the rest of day. Also, in these results the numbers are only guiding and it is important to remember that the desired frequency presumably depends very much on the going period of the individuals. However, the result is consistent with the result of Finnish Working Life Barometer in 1997, where the typical frequency of telework was 1-3 days per month.



PICTURE 16. Frequency of teleworking per month (N=28, 1 missing case)

An interesting discovery was that the respondents who had a workroom wanted telework more than the respondents without workroom (PICTURE 17). The other factor that seemed to influence the desired frequency of teleworking was the occupation (TABLE 11). The professors and assistant professors were the most interested in telework. The result is consistent with the other research where the professionalism has been found to typically correlate positively with telework (Ruppel & Harrington 1995: 99; TYT 2000: 18). However, in this study the correlation could not be found between the desired frequency of telework and the length of daily way to work that was mentioned to be a reason for telework. The explanation may be slight amount of the respondents with long daily way to the office.



PICTURE 17. Influence of workroom on desired frequencies of teleworking (N=28, 1 missing case)

TABLE 11. Influence of title on desired frequency to telework (Included the titles which had at least four samples, N=28, 1 missing case)

Title	Mean (days / month)
Professor	12,4
Assistant professor	9,2
Lecturer	4,8
Assistant	5,3

Possibility to telework as much as wanted. After the respondents had considered how much they would like to telework, they were asked to ponder if it would be possible to telework so much. 85,7 % of the respondents answered "Yes". The result is consistent with the result of Nurmela, Heinonen, Ollila and Virtanen (2000) that indicates that the willingness for telework is smaller than the possibility to it. On the other hand, the result may indicate that the respondents considered the possibility already in the previous question concerning the frequency of teleworking. These two questions together may also demonstrate that Finnish employees are very loyal to the employer. It was interesting that those who had the longest way to work were the most critical of possibility to telework as much as they were announced, though they did not announce higher frequencies than the others.

Same schedule. Before more exact questions about driving and restraining forces, there was a question whether the respondents would arrange their teleworking days in the same way than the office days. The answers were divided equally between "Yes" and "No" answers. Half of the respondents announced to have same timetable in teleworking days and the other half announced that they do some changes. There were little differences with these answers between the telephone and the mail survey. In the mail survey 80 % of the respondents (N = 5) wanted to have same timetable while teleworking where as the same rate was 43,5 % (N = 23) in the telephone survey. However, the sample of the mail survey was so small that the result is probably due to coincidence.

The respondents, who wanted to change their schedule, stated that the most popular changes were new timing and perioding of work. The respondents wanted to start work

later and have longer working periods. In one case the change would have been negative and the periods would have been shorter because of more disturbing environment. In some cases the length and efficiency of working day were announced to be different.

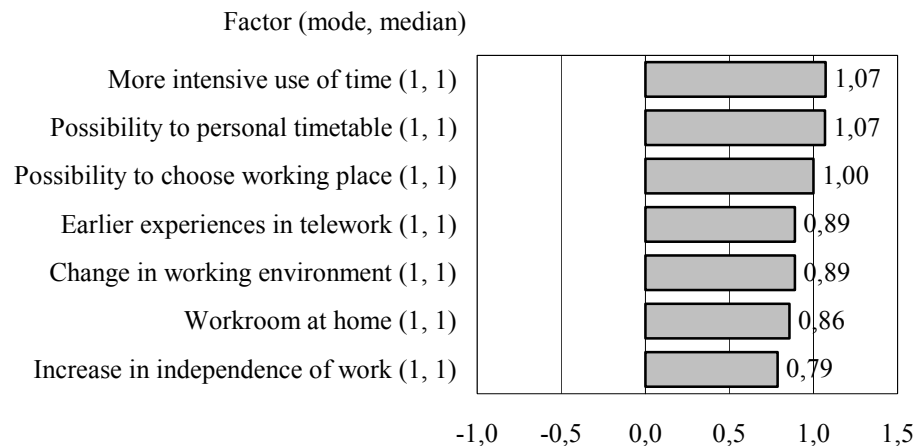
As found in the theoretical background, the reasons for changes were mostly desire to adjust working to the individual lifestyle and rhythm like sleeping and eating times. The respondents believed this to improve both creativity and concentration. Concentration was improved also because of better possibility to work in peace. Minor reasons were the family and decrease in commuting.

4.1.3 Driving and Restraining Forces

The driving and restraining forces were studied by using questions where the respondents were asked to define how the different factors influence their desire to telework. The respondents answered using 5-point Likert scale (Very positive, Positive, No influence, Negative, Very negative). In addition the respondents could choose "Hard to say". On grounds of the results, the factors can be divided into three groups:

1. Driving factors: The influence on the desire to telework was defined to be mainly positive.
2. Respondent dependent and neutral factors: The influence on the desire to telework was defined to be both negative and positive depending on the respondent or the answer "No influence".
3. Restraining factors: The influence on the desire to telework was defined to be mainly negative.

It is not so easy to draw a dividing line between the three groups but there were seven factors that can be interpreted to be as driving factors (PICTURE 18). The means of them were over +0,5 (0 "No influence", 1 "Influences positively", 2 "Influences very positively") and there were only some random opposite answers. The three most encouraging factors were **"More intensive use of time"**, **"Possibility to personal timetable"** and **"Possibility to choose working place"**. Both the possibility to flexible personal timetable and more intensive use of time were mentioned as the driving factors also in the earlier answers to the reasons for changes of timetable in teleworking.



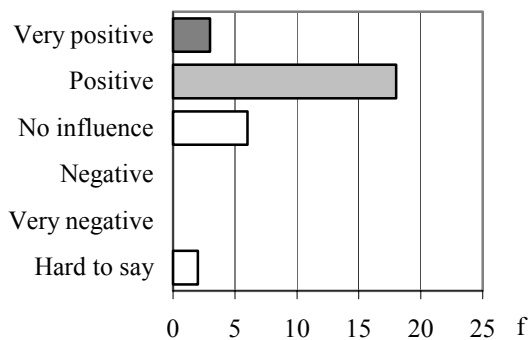
PICTURE 18. Driving factors of telework and their means (0 No influence, 1 Positive influence, 2 Very positive influence; N=29)

The results are different from the previous results of telework of computing people both in Singapore and in the U.S. In the U.S. the most important reason for telework was the family while in Singapore it was commuting. However, the second most important reasons were the change in the working environment and the autonomy of personal schedule. Both of them can be found from the list of driving factors. Because the sample of this study was quite small the means of different studies are not comparable. Also, the cultural and environmental differences have to be considered when the results from different countries are used.

The recent working conditions can also influence the result. For example, the importance of the **"Possibility to personal timetable"** could be higher if the respondent had not freedom to choose working time already. Instead the positive attitude to the **"More intensive use of time"** reflects the longing for possibility to concentrate to the work. Because working is not measured by working time instead of performed tasks, more intensive working can increase leisure time. However, one respondent considered the "more intensive use of time" to influence negatively desire to telework.

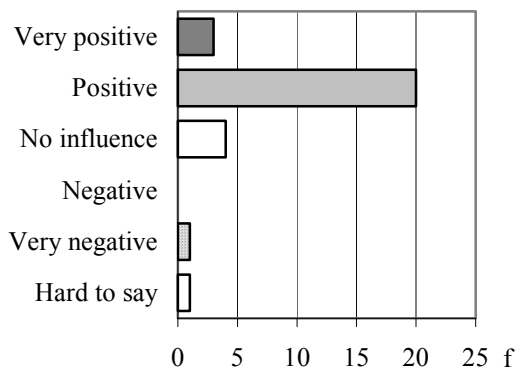
The **"Earlier experiences in telework"** was clearly as a driving factor (PICTURE 19). Nobody mentioned it to influence the desire to telework negatively. Two respondents announced the influence as "Hard to say", while they did not have earlier experience of

telework. Almost similar positive distribution occurred in the **"Possibility to choose working place"** and the **"Increase in independence of work"** factors. Some groups of educating people, like professors, already have a possibility to choose working place, which may explain some comments where the "Possibility to choose working place" was defined to be unimportant. The same situation was also with the "Increase in independence of work". The work of most educating people already is very independent.



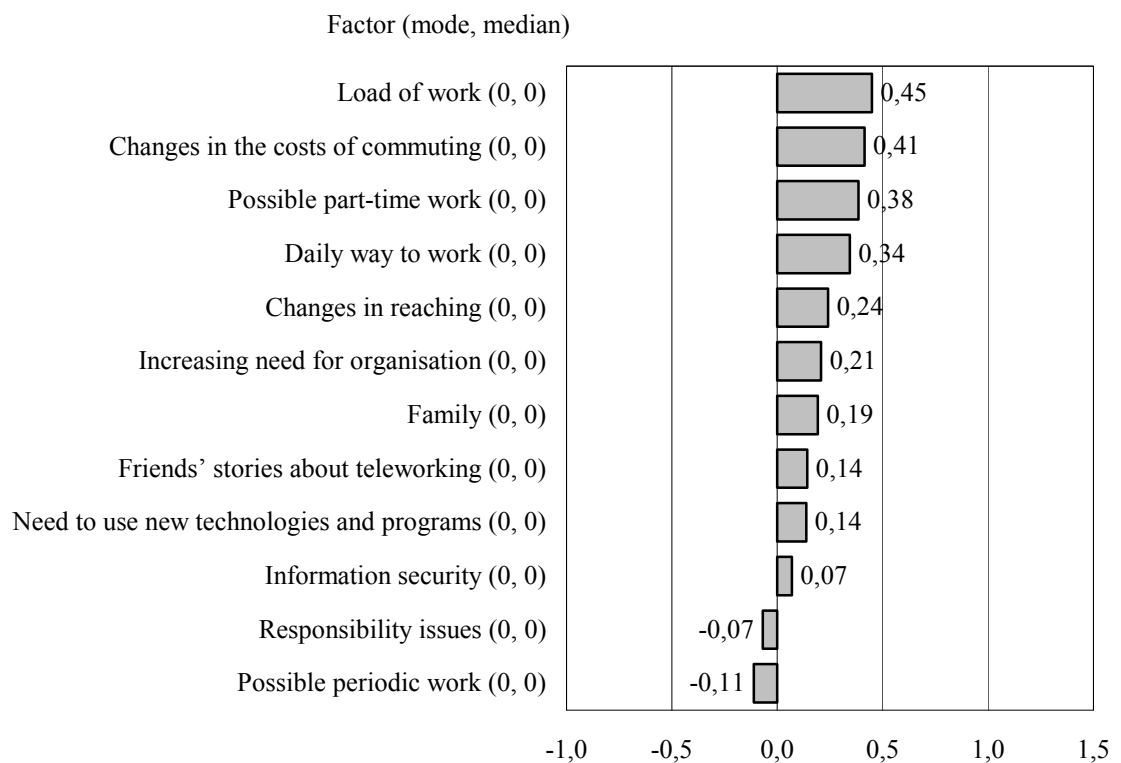
PICTURE 19. The influence of "Earlier experiences" to the desire to telework (N=29)

79,3 % of all the respondents announced that the "Workroom at home" has either positive or very positive influence on the desire to telework (PICTURE 20). However, there was also one respondent who could not define the influence and one who defined influence to be very negative. Both respondents did not have workroom at home, which explains the different answers. Probably the respondents stating very negative influence thought that the lack of workroom influences very negatively and, thus, the meaning of workroom is critical as with others. If these two differing values were eliminated from the material, the "Workroom at home" would be the third significant positive factor.



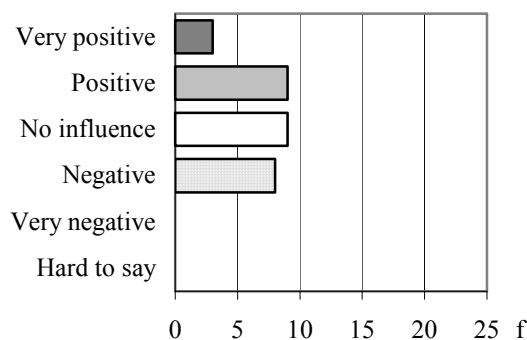
PICTURE 20. The influence of "Workroom at home" to the desire to telework (N=29)

The group "Respondent dependent or neutral factors" consists of 12 factors (PICTURE 21) that were defined to influence the desire to telework both negatively and positively depending on the respondent, or that were defined to have no influence.



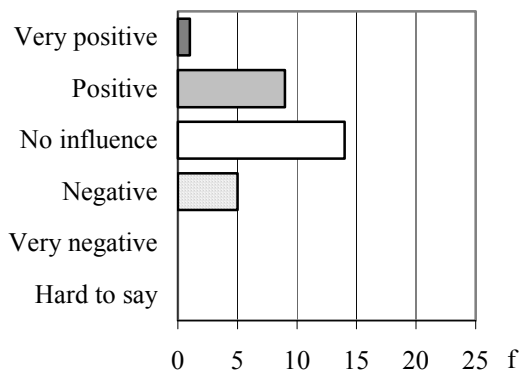
PICTURE 21. Means of the respondent dependent and neutral factors (-2 Very negative influence, -1 Negative influence, 0 No influence, 1 Positive influence, 2 Very positive influence; N=29)

Options concerning the **"Changes in reaching"** were the most polarised factor (PICTURE 22). Supposing that reachability decreases during telework, the positive influence is caused by the possibility to work in peace when reaching is more complicated. The hypothesis is supported by the Spearman's rank correlation coefficient of the "Change in reaching" and the result on how the respondents believed telework to influence the possibility to work in peace ($r_s = 0,40$). However, the correlation coefficient ($r_{xy} = 0,21$) do not support it. The respondents, who stated negative influence, probably thought that communication and the flow of information will deteriorate telework. Also this hypothesis can be verified by the correlation coefficients ($r_{xy} = 0,42$; $r_s = 0,53$) but it is notable that the influence of telework on the flow of work was defined to be only "Negative" or "No influence" and the differences between the groups were very small.



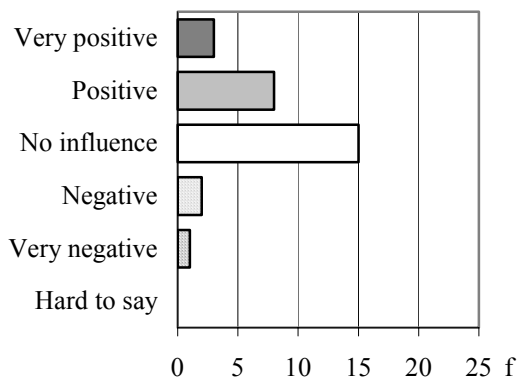
PICTURE 22. The influence of "Changes in reaching" to the desire to telework (N=29)

The second factor that divided opinions quite strongly was the **"Increasing need for organisation of work"** (PICTURE 23). There were negative (17,2 %), positive (13,8 %) and very positive (3,4 %) answers. The positive influence is possible to defend by the possibility to arrange time to work in peace ($r_{xy} = 0,28$; $r_s = 0,33$) and more effectively, whereas the negative influence can be justified by additional organising work.



PICTURE 23. The influence of "Increasing need for organisation" to the desire to telework (N=29)

"Daily way to work" was defined to have mostly no influence on the desire to telework but there were also some answers where it was defined as negative, very negative, positive, or very positive (PICTURE 24). The three respondents stated negative influence lived at a distance of 2 - 3 kilometres from the office. Thus, it is possible to deduce that their short way to work causes them to they prefer to come at the office rather than stay at home and, thus, the influence is negative. This is supported with the observation that all of them have considerable lower interest in teleworking (mean 1,0; the scale was 0 - 3) than the average interest (mean 2,1). The influence of the "Daily way to work" on the desire to telework correlates with the length of the daily way to work but also with the age (TABLE 12). The correlation with age can not be explained by older respondents' longer way to work because they did not correlate with each other ($r_{xy} = -0,05$).

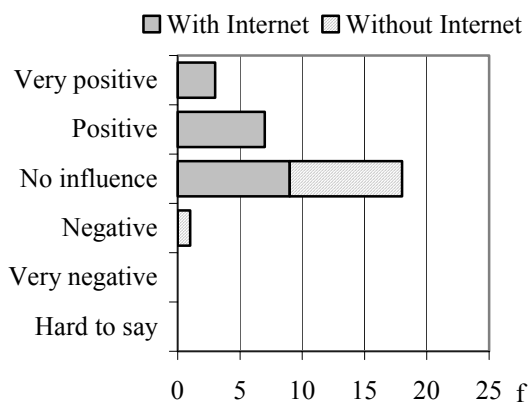


PICTURE 24. The influence of "Daily way to work" to the desire to telework (N=29)

TABLE 12. Correlation coefficients of influence of daily way to work on desire to telework (N=29, * 1 missing case)

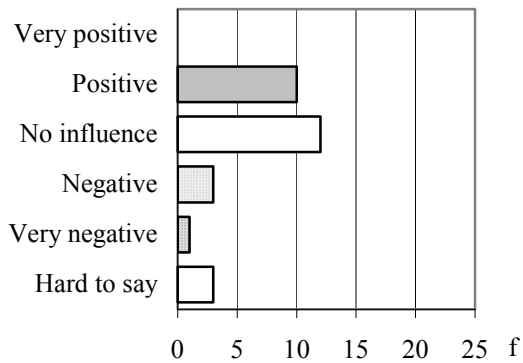
	Correlation coefficient (r_{xy})	Spearman's rank correlation coefficient (r_s)
Interest in telework*	0,30	0,33
Daily way to work	0,48	0,44
Age*	0,31	0,41

All who announced to walk, defined the influence of the "**Changes in the costs of commuting**" to be neutral regardless of other possible commuting ways (PICTURE 25). Also, all respondents who announced to use a bicycle but not a car defined the influence as neutral. However, their way to work was not more than five kilometres. The length of daily way to work seemed to correlate with the influence of the costs of commuting on the desire to telework ($r_{xy} = 0,57$; $r_s = 0,56$). Unexpectedly, the respondents with Internet connection at home emphasised more the importance of the costs of commuting than did the respondents without Internet connection. Perhaps the meaning of commuting becomes more significant if the respondent has technical readiness for telework.



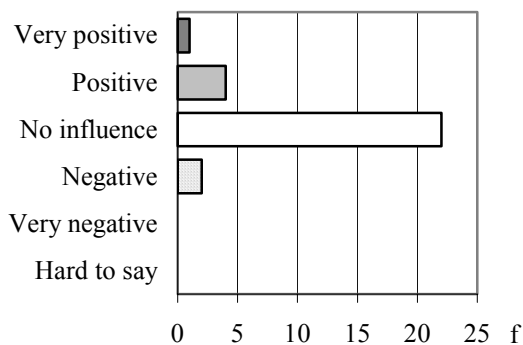
PICTURE 25. The influence of "Costs of commuting" to the desire to telework (Separated by existence of Internet at home, N=29)

Unlike in the study of Beasley and Lomo-David (2000), where the family was the most important reason for telework, in this study the significance of the **"Family"** was a factor that divided opinions (PICTURE 26). The respondents did not comment the reasons but the increasing presence near the family may be seen as a positive factor. In contrast, it is possible to think also that the presence of family is disturbing working.



PICTURE 27. The influence of "Family" to the desire to telework (N=29)

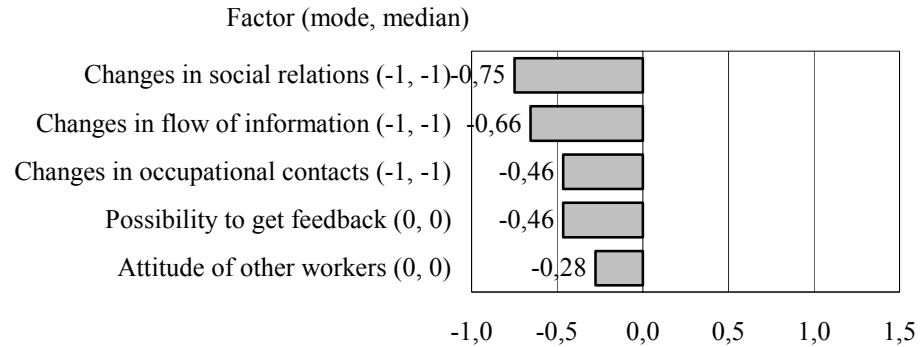
"Need to use new technologies" did not seem to influence the desire to telework (PICTURE 28). The employers of the department are very technologically oriented and implementing of new technologies is not so big issue for them.



PICTURE 28. The influence of "Need to use new technologies" to the desire to telework (N=29)

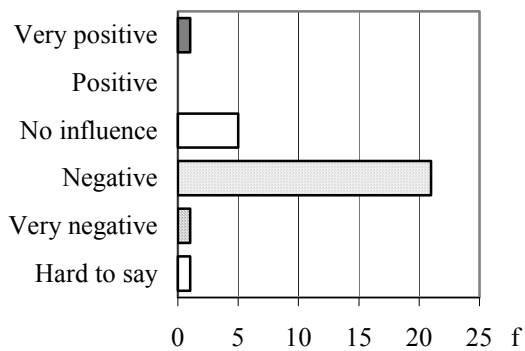
Only five factors were defined as restrictive. The four most negative factors were social and communicational (PICTURE 29): the **"Change in social relations"**, **"Changes in flow of information"**, **"Possibility to get feedback"** and **"Changes in occupational**

contacts". The only communicational factor with positive mean was "Changes in reaching" and its mean was only 0,24 that is closer to neutral than positive influence.



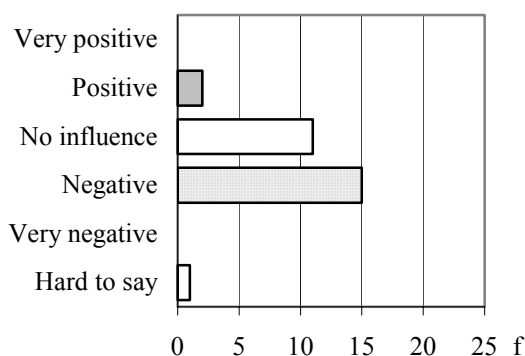
PICTURE 29. Means of restraining factors (-2 Very negative influence, -1 Negative influence, 0 No influence; N=29)

Most respondents (75,8 %) thought that the "**Change in social relations**" restricts their desire to teleworking and 17,2 % thought that it does not influence (PICTURE 30). On the other hand, one respondent thought that the change in social relations has very positive influence on the desire to telework. Probably, this question could be interpreted in different ways. Probably most respondents considered the social relations at the office and they defined the change to be negative because both communication with the fellow workers and the flow of information may decrease. However, the question could be understood more widely and a positive answer may be a result of the idea that relations to outside interest groups will improve when teleworked. This assumption is supported by the result that the respondent who evaluated the change to be very positive, evaluated also the change in occupational contacts to be positive. The other possible positive consequence of the change is that unnecessary communication decreases and possibility to work in peace increases.



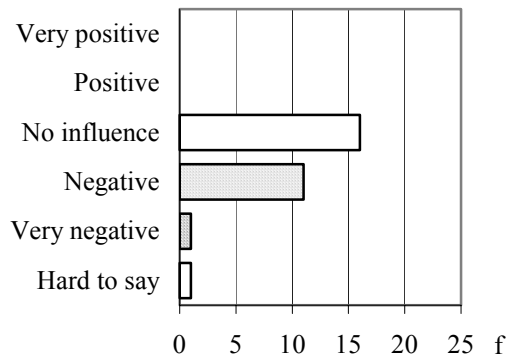
PICTURE 30. The influence of "Change in social relations" to the desire to telework (N=29)

Even if the mean of the "**Changes in occupational contacts**" (PICTURE 31) was negative, quite many stated no influence (37,9 %) and few answers defined the influence to be positive (6,9 %). Positive opinions can be explained by the idea that teleworking may enable more occupational contacts outside the office. Now it is important to remember that telework can be interpreted to mean also working somewhere else than at home. Thus, nomadic teleworking can help to maintain and also to create new occupational contacts and, thus, it can influence positively. Instead, the amount of neutral comments can be a consequence of the assumptions that teleworking is part timely and that there still is sufficiently time for occupational contacts at the office. Also the existence of technology, like mobile phone, may decrease the significance of presence.



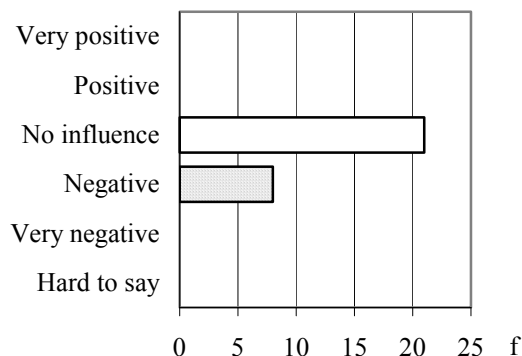
PICTURE 31. The influence of "Changes in occupational contacts" to the desire to telework (N=29)

There were only neutral or negative answers to the "**Possibility to get feedback**", which was one of the four most negative factors (PICTURE 32). However, a respondent commented that it can be possible to get feedback also from outside of the department if teleworking is nomadic and the worker has other occupational contacts while teleworking.



PICTURE 32. The influence of "Change in possibility to get feedback" to the desire to telework (N=29)

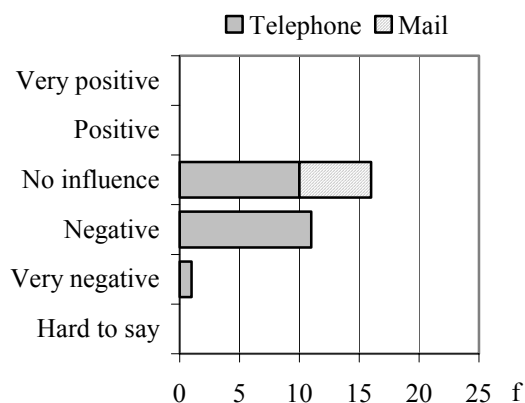
Also, the influence of the "**Other workers' attitudes**" was emphasised only negatively or as "Not at all" (PICTURE 33). The result probably reflects the not-established position of teleworking at the department. Perhaps there have not been common and wide discussions about it and, thus, it has not been widely accepted way to work publicly.



PICTURE 33. The influence of "Other workers' attitudes" to the desire to telework (N=29)

At the end of the table there were asked **other possible factors** that could influence the desire to telework. 11 respondents (37,9 %) added their own factors that they considered missing from the table. The most often added factor was the possibility work in peace when needed. They also mentioned that better concentration improves the efficiency of work. Other mentioned factors were summer, weather, easiness and flexibility in the use of time.

There were some differences between the results of the telephone and the mail survey. The most notable difference was in the question about changes in the possibility to get feedback (PICTURE 34). All the respondents of the mail survey answered that it do not influence whereas 52,1 % of the respondents interviewed by telephone answered that the influence is negative or very negative. However, the explanation for the difference is hard to find.



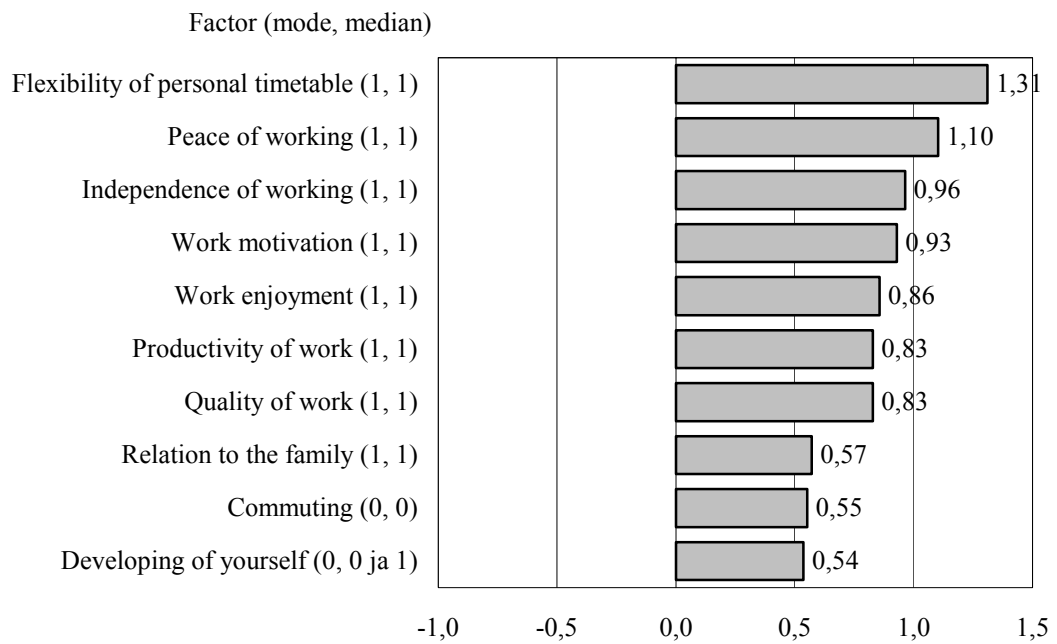
PICTURE 34. The influence of "Change in possibility to get feedback" to the desire to telework (Separated by the interviewing method; N=29)

4.1.4 *Possibilities and Threats of Teleworking*

As driving and restraining factors, possible consequences of telework can be divided into three groups on grounds of the attitudes of the respondents:

1. Positive consequences: The consequence of telework was defined to be mainly positive.
2. Respondent dependent or neutral consequences: The consequence of telework was defined to be both negative and positive or unimportant ("No influence").
3. Negative consequences: The consequences of telework was defined to be mainly negative.

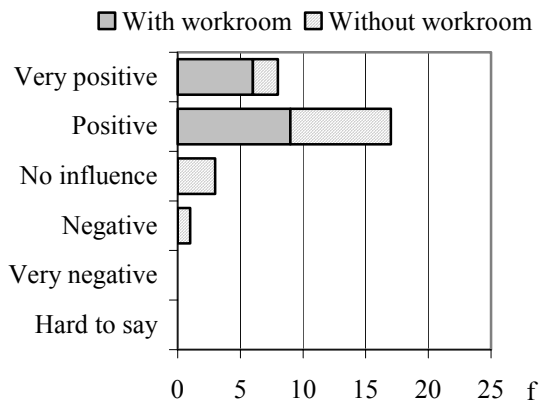
The dividing lines between these three groups were even more imprecise than the differences between the groups of driving and restraining factors. However, 10 factors were defined to be as positive consequences of telework (PICTURE 35) and the means of them were over + 0,5 (0 "No influence", 1 "Positive influence", 2 "Very positive influence"). However, the respondents did not agree on every factor but in this group the negative opinions were minor (not more than three). Thus, the factors denote the possibilities of telework at the department. It is also noteworthy that almost everybody of the respondents had earlier telework experiences and, thus, the results indicate how the respondents really feel telework to influence, instead of how they believe it influence. That is at least with the consequences which are close to the individual but there may be more speculation with the factors like "Flexibility of the activities of the university", "Image of the university" and "Position in labour market" because they are not so concrete phenomena for the individual. Therefore the answers to these questions are more believes.



PICTURE 35. Positive consequences of telework and their means (0 No influence, 1 Positive influence, 2 Very positive influence; N=29)

Even though only half of the respondents announced to change their timetable when teleworking the **"Flexibility of personal timetable"** was experienced to change mainly positively when teleworking, and it also was one of the two most important driving factors. There were only two respondents who defined that telework do not influence the "Flexibility of personal timetable".

The other "Very positively" changing factor was the **"Possibility to work in peace"** (PICTURE 36) that was already stated to be important for the educating people in the earlier questions. The results correlated positively with the influences on productivity and quality but also with influences on personal development and occupational development (TABLE 13). The respondents, who considered the change in working environment as a motivating factor for teleworking, also considered teleworking to influences positively on the possibility to work in peace.



PICTURE 36. The influence of telework to the "Possibility to work in peace" (Separated by existence of workroom at home, N=29)

TABLE 13. Correlation coefficients of "Possibility to work in peace" (N=29)

Factor	Possibility to work in peace (r_{xy} / r_s)
Productivity of work	0,50 / 0,64
Quality of work	0,42 / 0,54
Personal development	0,54 / 0,54
Occupational development	0,57 / 0,65
Influence of change in working environment on desire to telework	0,77 / 0,84

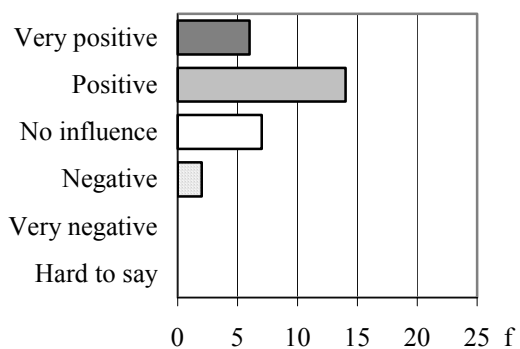
However, the change can also be negative as one respondent defined. In home-based teleworking the other members of the family may disturb working. The hypothesis is supported by the fact that the respondents with workroom had more positive image of possibility to work in peace while teleworking. Therefore, it is always important to consider the possibility of telework case-by-case. The influence may be negative also with nomadic teleworking if people had to work at airports or in trains, for example.

There were not negative answers to the question about the "**Independence of working**" but it has to be remembered that working in the department is quite independent already. The work results are meaningful, while the hours you spend are not. Thus, it

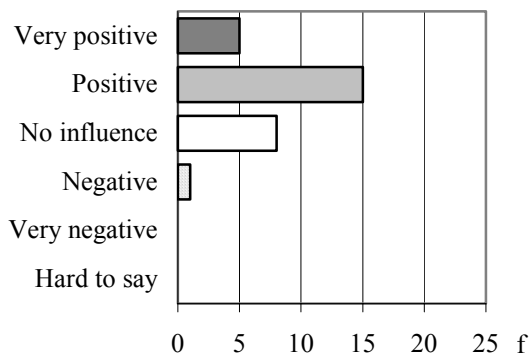
can be supposed that the respondents may already have positive attitude to the independence of working.

Another very positively experienced consequence of telework was the **"Change in work motivation"**. A reason may be better possibility to arrange employee's own work more freely, as mentioned in the theoretical background. However, research is an important part of the respondents' work and they want to do it in peace. Thus, it is possible that they can achieve better work motivation by part-time telework because of better concentration and, thus, they can perhaps achieve better results, also. Same kind is situation with the **"Work enjoyment"**, also.

The results of the **"Productivity of work"** (PICTURE 37) and the **"Quality of work"** (PICTURE 38) support this assumption. Most respondents (about 69 %) associated teleworking improving both productivity and quality of work, which correlate strongly with the results of the influence on work motivation (TABLE 14). Even stronger was the correlation with the result of influence on occupational development. Improvement in productivity and quality can be the result of better concentration. In contrast, travelling and nomadic teleworking can influence negatively because limited concentration and more slight communication with fellow workers. The amount of teleworking is also meaningful: if there is too little teleworking better concentration is not possible and excessive teleworking will cause problems with communication, work society and working. Again, it can be stated that it is important to consider the use of telework case-by-case. Nobody's working should not change more uncomfortable because of teleworking.



PCITURE 37. The influence of telework to the "Productivity of work" (N=29)



PICTURE 38. The influence of telework to the "Quality of work" (N=29)

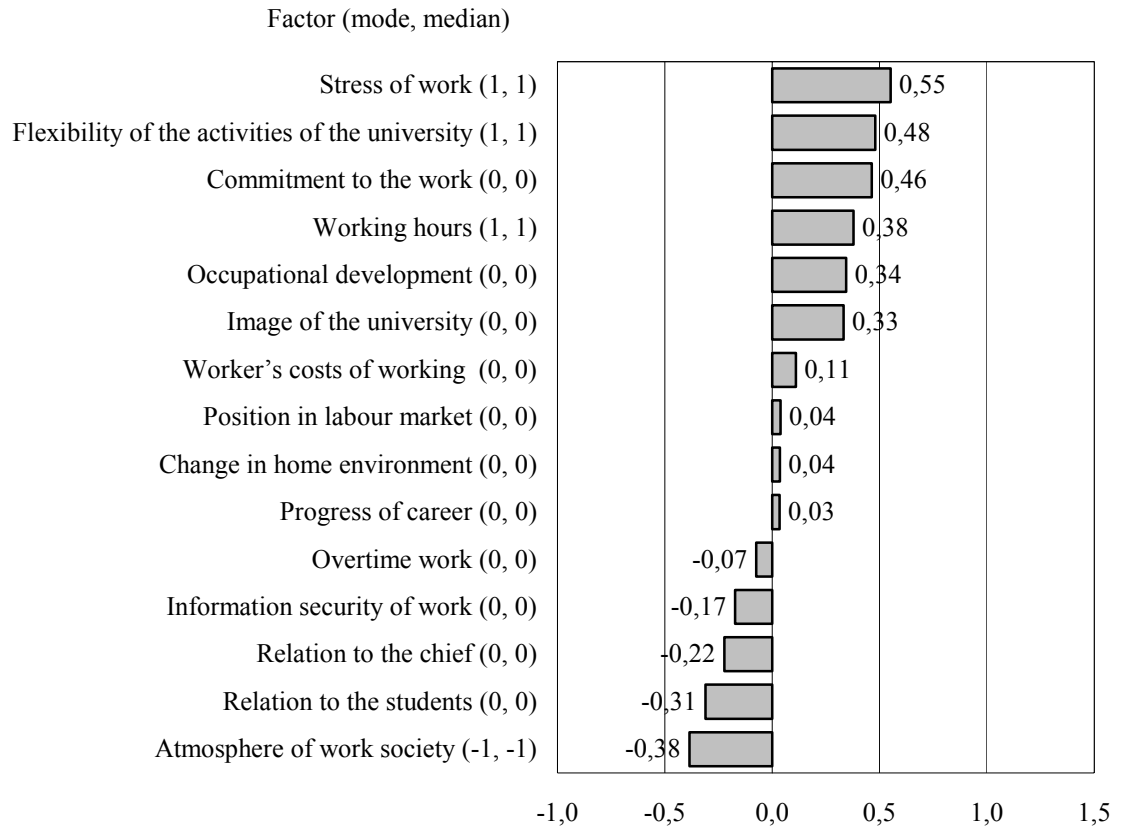
TABLE 14. Correlation coefficients of "Productivity of work" and "Quality of work" (N=29)

	Productivity of work (r_{xy} / r_s)	Quality of work (r_{xy} / r_s)
Influence on work motivation	0,72 / 0,77	0,60 / 0,70
Influence on occupational development	0,81 / 0,83	0,78 / 0,80

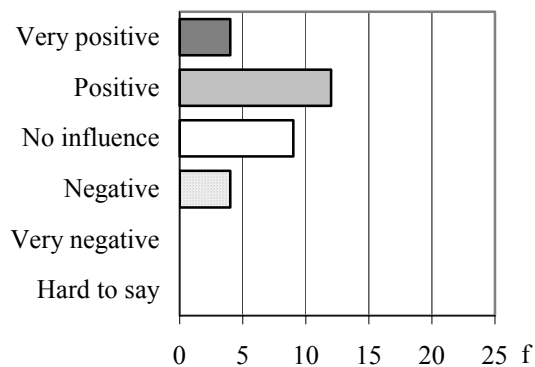
Although the "Daily way to work" was not a significant factor in driving forces, telework was defined to influence the "**Commuting to the workplace**" only positively or not at all. Nobody grieved for decrease in commuting and the little significance can be explained by the little amount of desired teleworking days. Teleworking one or two days per week does not essentially decrease time or money used to commuting. Another factor that probably influenced this result was the small amount of the respondents having long daily way to work. Consistently with the previous studies, this study revealed that the respondents with longer way to work valued more the decrease in commuting when teleworking ($r_{xy} = 0,54$; $r_s = 0,57$).

There were fifteen factors that divided opinions of the respondents or which were not changed because of telework (PICTURE 39). Although over half of the respondents (55,2 %) thought that telework will influence positively the "**Stress of work**" (PICTURE 40) there were also different experiences that are important to consider

when planning telework because it is not reasonable to increase the stress of workers by telework.

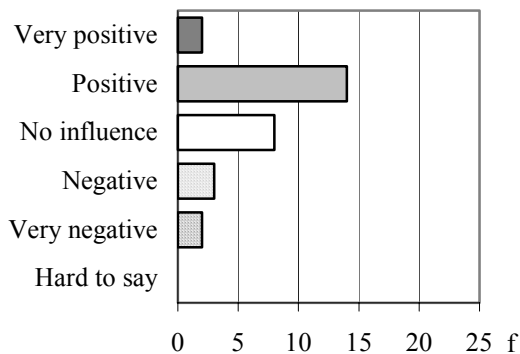


PICTURE 39. Consequences of telework that were experienced to change both positively and negatively and consequences that were not influenced by telework (-2 Very negative influence, -1 Negative influence, 0 No influence, 1 Positive influence, 2 Very positive influence; N=29)



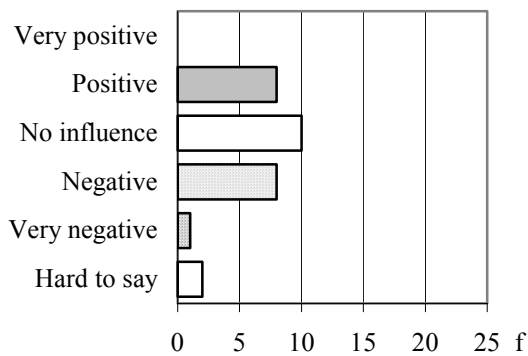
PICTURE 40. The influence of telework to the "Stress of work" (N=29)

The opinions varied most within three factors: the "Overtime work", "Working hours" and "Change in home environment". The **"Working hours"** was believed to change both very negatively and very positively (PICTURE 41). More effective working, or time saved on commuting may explain positive opinions because they will release time for family. Instead, the respondents having negative attitude may suppose that they would work more while teleworking because there is not so clear distinction between working time and leisure time, which has been stated to be a risk with home-based telework. Also the mode of telework may have influence. In nomadic telework the working time can increase if there is nothing else to do. The respondents of the mail survey had more positive picture of working hours while teleworking. But because of the small sample it can be a coincidence.



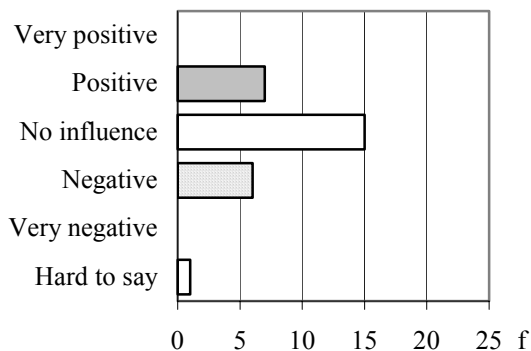
PICTURE 41. The influence of telework to the "Working hours" (N=29)

The same situation applies to the **"Overtime work"** (PICTURE 42). The negative answers are from the respondents who believed the working time and overtime work to increase and the positive answers are from those who believed that work will be done more effectively. Although the mean of the "Working hours" was positive (0,38) and the mean of the "Overtime work" was negative (-0,07) they correlated positively ($r_{xy} = 0,58$; $r_s = 0,60$).



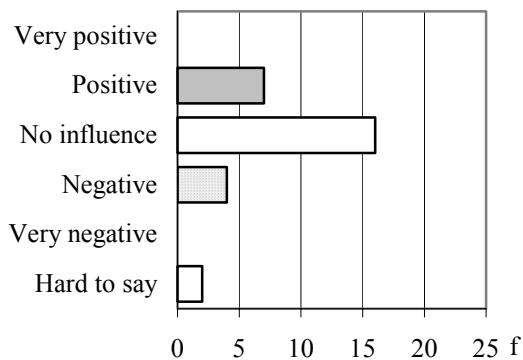
PICTURE 42. The influence of telework to the "Overtime work" (N=29)

The **"Change in home environment"** (PICTURE 43) was mostly estimated to remain unchanged but there were also few attitudes for negative (20,7 %) and positive (24,1%) change. The negative change can be caused by the materials that have been brought from the office to home. Another possible reason for the negative change can be the division of home to common premises and limited premises, which may cause additional tension at home. It may also hinder the separation between work and relaxing. Instead, it is more difficult to explain positive change in home environment by the results found.



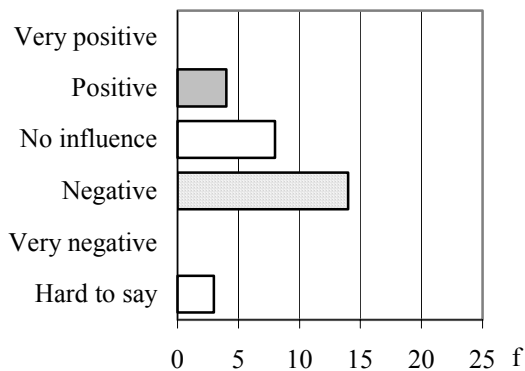
PICTURE 43. The influence of telework to the "Change in home environment" (N=29)

According to the results of this study, the influence of telework on the **"Worker's costs of working"** was not meaningful (PICTURE 44). However, the sample included only few employee with a long way to work and that probably influenced the result. Overall, the respondents with longer way to work experienced the change in costs more positively ($r_{xy} = 0,35$ and $r_s = 0,39$).



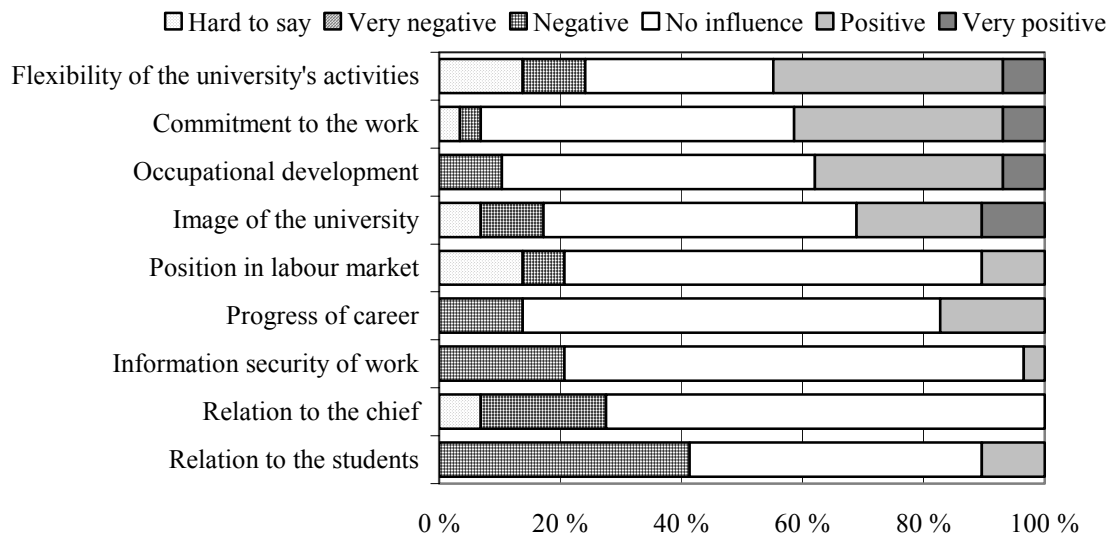
PICTURE 44. The influence of telework to the "Worker's costs of working" (N=29)

The influence of telework on the "**Atmosphere of work society**" were mostly defined to be negative while there were also some positive opinions (PICTURE 45). This survey did not reveal why some respondent thought telework to influence positively the atmosphere of work society but it may indicate some problems in the work community. For example, if telework decreases the stress of employees its influence on atmosphere can be positive.



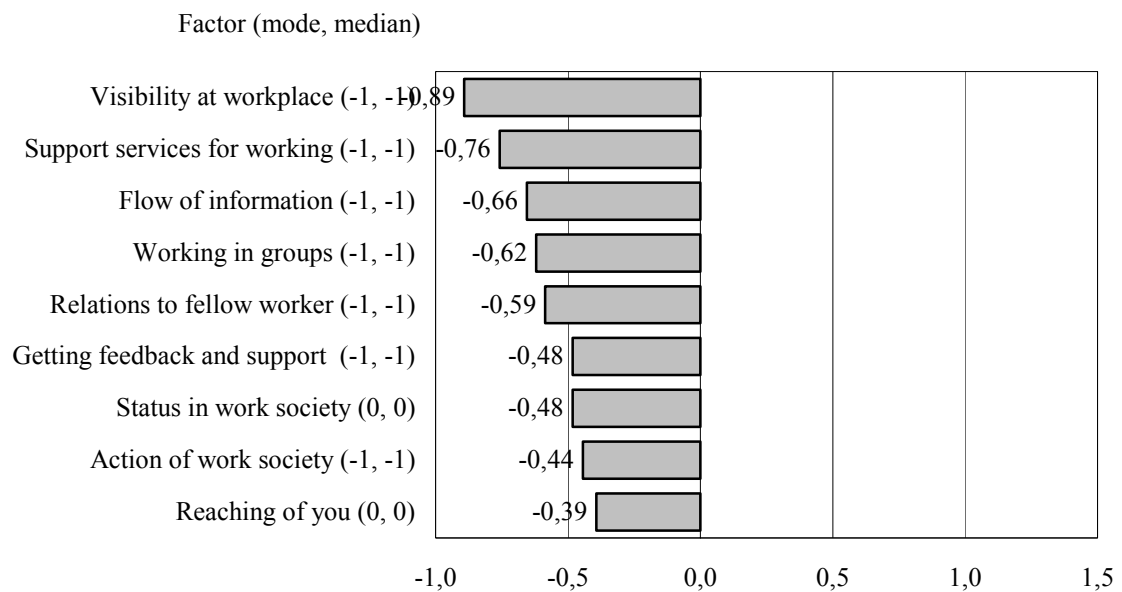
PICTURE 45. The influence of telework to the "Atmosphere of work society" (N=29)

Picture 46 presents the division of the answers with the rest factors in the group "Respondent dependent or neutral consequences". Those factors are mostly more distant for the individual and, perhaps, therefore they were not experienced to change so much.



PICTURE 46. Division of answers with other factors that divided opinions or were defined mostly "No influence" (N=29)

Telework was experienced to influence negatively almost ten factors (PICTURE 47). The **"Visibility at the workplace"** was experienced to change most negatively. This is obvious but it does not comment on the final consequences of smaller visibility. Is it always necessary to be visually present? In fact, it is probable that visibility will increase unnecessary contacts that may be positive but also negative. It depends on situation and tasks. On the other hand, as it was mentioned in the theoretical background, teleworkers may be forgotten when new projects are planned and that can be harmful to the teleworkers' career. Similarly to the productivity and quality of work, the amount of teleworking is significant for visibility. In part-time telework there is not so considerable change in visibility.

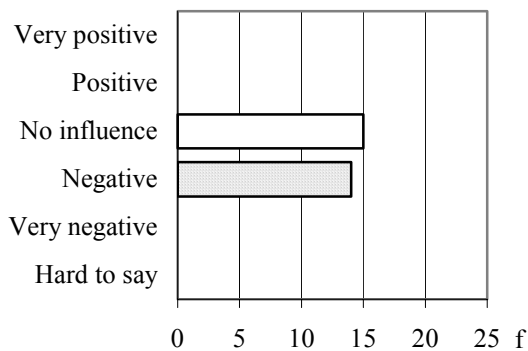


PICTURE 47. Negative consequences of telework and their means (-2 Very negative influence, -1 Negative influence, 0 No influence; N=29)

The negative change in the **"Support services for working"** is obvious too. For example, copying and mailing could be more complicated because the needed devices are not available at home or in an airport. Thus more planning of working is required so that those tasks are timed in office days, or the performing of them has been made possible during teleworking.

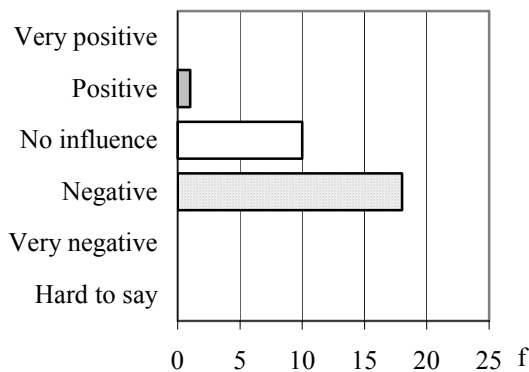
The third negatively experienced factor was the **"Flow of information"**. This is a very critical part of knowledge-oriented organisation's actions and it should be organised carefully with or without telework. Probably the respondents thought that the flow of information will remain unchanged during telework. However, as it was considered before, thoroughly planning and the reorganising of the flow of information can even improve the situation.

In addition of those three factors, there was one factor that was experienced to change negatively or not at all: the **"Status in work society"** (PICTURE 48). Perhaps the respondents suspected the acceptability of telework and, thus, were afraid of their status in work society. It could be expected that those who experienced decrease in status also defined other workers' attitudes to influence their desire to telework. However, according to the results, there was no correlation between these factors ($r_{xy} = 0,18$).



PICTURE 48. The influence of telework to the "Your status in work society" (N=29)

Same background can be seen also by the question about the **"Relations to fellow workers"** (PICTURE 49). There were also lots of negative answers (62,1 %). It is considerable that this opinion may be sensitive to changes in common attitudes about telework, and also the amount of telework. If telework was a generally accepted working method at the department, and if it was implemented part-timely, it is possible to suppose that the result would not be so negative. Perhaps, the same assumption applies to the results of the **"Relation to the manager"**, although, the result was more neutral.



PICTURE 49. The influence of telework to the in "Relation to the fellow workers" (N=29)

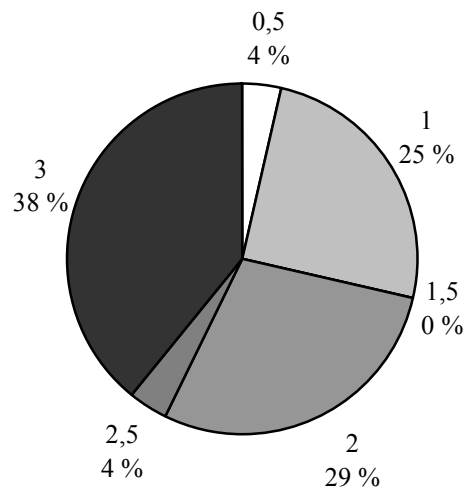
As defined in the theoretical background and as indicated by the earlier question about teleworkable tasks, the task requiring groupwork are not suitable for telework. Similarly working in groups was experienced to change negatively while teleworking. Also getting feedback and support were defined to be more difficult. The respondents did not

seem any significant problems in the reaching of people. The reason for that may be the quite frequent use of communication technologies (mobile phone and e-mail) that allows communication over a distance.

Moreover, the respondents had a possibility to name **other possible consequences of teleworking**. Both the effectiveness and quality of work while teleworking were mentioned twice. Other mentioned factors were closer relations to the outside world, changes in the structure of working (less interruptions) and focus of life (higher concentration on work).

4.1.5 Interest and Other Comments

At the end of the questionnaire the respondents were asked to evaluate their interest in telework with the scale from 0 (not at all interested) to 3 (very interested) (PICTURE 50). The mean of the evaluation was 2,1, which indicates quite strong interest in teleworking. The result confirms that the doubts about the negative attitudes of the coworkers are unnecessary in the Department of Computer Science and Information Systems because the general interest in telework was significant. All respondents were interested in telework at least a little.



PICTURE 50. Interest in teleworking in the Department of Computer Science and Information Systems (N=28)

The slight correlation can be seen between the length of the way to work and the "Interest in telework" (TABLE 15). The correlation might have been stronger if there

had been more respondents with long way to work. The "Interest in telework" correlated with some other factors also. As it was expected, the higher was interest in teleworking, the higher was the desired frequency of teleworking. In addition, there was a correlation with beliefs in the better productivity and quality of work. This was able to observe also with the interest in different teleworking modes. The respondents, who believed teleworking influence positively in the productivity and quality of work, were more interested in different modes of telework.

TABLE 15. Correlation coefficients of "Interest in telework" (N=28)

Factor	Interest in telework (r_{xy} / r_s)
Length of daily way to work	0,34 / 0,31
Desired frequency of telework	0,62 / 0,71
Influence on productivity of work	0,62 / 0,67
Influence on quality of work	0,65 / 0,69

Other comments. Fourteen respondents answered also to the last open question about their thoughts about the subject. The possibilities and threats of teleworking as well as the attitudes and technology issues were commended. The answers reflected need for the appropriate implementing of telework; the respondents thought that there have to be a reason for teleworking. As a possibility of teleworking the peace for working was mentioned again. Also increase in creativity and the possibility to work during business trips were mentioned to be the advantages of telework. Working during the business trips was found to be important because the business trips and other working situations outside the university have increased.

Different kinds of communication situations were mentioned as the threats of teleworking. Face-to-face contacts were required while groupworking and communicating with the students. In addition, the transferring of tacit knowledge was found to be difficult while teleworking. There was also reference to the significance of coffee room and lecture room in the forming of identity. One respondent also stated that teleworking may increase work related stress because it is more difficult to interrupt work and forget it if the material is at home. Also, possible difficulties with

management where mentioned. The answers reflected mainly positive attitudes to teleworking and few respondents described their practices of teleworking. One respondent commented that the university should be a pioneer also in this sector.

The technical possibilities to teleworking were experienced to improving continuously. However, one respondent stated that the costs are still too high, which limits the desire to acquire them.

4.2 Results of Administrative Survey

The response rate of the administrative survey was 25,0 % (9 returned questionnaires). An apparent reason of the low response rate was the time of the survey: people were very busy with they work. However, it was not possible to repeat the survey. According literature, the response rate of 30 % is not adequate for analysis usually (Babbie 1990: 182; Floyd & Fowler 1988: 49) and, therefore, any remarkable conclusions cannot be done on grounds of these results.

There were answers from the different faculties: Humanities, Mathematics, and Natural Science, Sport and Health Science, and Computer Science and Information Systems. In addition, two separate institutes returned the questionnaires.

Almost half of the organisations announced that they had teleworking educating people. Although the amount of the other staff was larger than the amount of educating people in the organisations, only one organisation announced that there were also other people who teleworked. According to the answers, conversations about telework have also been casual. Over half of the organisations announced that they have not discussed about telework earlier.

The answers to the minimum presence of educating people were divided in two. Half of the organisations demanded almost continual presence whereas the other thought that presence of 2 - 4 days per week may be enough if the requirements of the duties were considered.

The influence of telework on working efficiency was experienced to change mostly positively. However, for some duties teleworking may be beneficial and for some others

it may be harmful. The quality of work was experienced to change both positively, negatively or not at all. The better quality of work was mentioned to be the result of better concentration and the publication of material in Internet. On the other hand, spontaneous conversations may be reduced, which may reduce new ideas and the solutions to complicate problems.

The flow of information was experienced to worsen in half of the cases. Lot of information has been changed in unofficial conversations in coffee breaks, which are decreased while teleworking. On the other hand current technology was experienced to enable the adequate flow of information and replanning of the information flow may be beneficial. Also, the reachability of people was announced to worsen. However, with this question some respondent thought the recent technology enable communication while teleworking.

Common meetings were experienced to be more important while teleworking. The amount of them would increase and there would be more issues to consider because they cannot be discussed spontaneously during unofficial meetings. However, the conversations may also be more efficient and high-qualities because they have to be better prepared. The regular meetings would require more organisations and also some tasks may be useful to reorganise. Clear rules for teleworking have to be agreed on so that teleworking would be useful and generally acceptable. The rules and careful planning would also facilitate separating leisure time from working hours, which may be more difficult while teleworking.

Investment in equipment was experienced to be problematic in several organisations. The costs will increase and they may not be possible to carry out. Also, need of technical support were experienced to be considerable when teleworked. However, the organising of it would also be more difficult from distance. The attitudes to the need of workrooms were different. Part of the respondents thought that there should be own workroom for everybody also when teleworked where as some others thought that it is also possible to share workrooms if the workers agreed it and everybody can have own workstation. Addition workstation in the office and required equipment at home there were arisen a question about recompensing the teleworker for use of premises at home.

Also, satisfaction with work was evaluated to change positively in half of the answers. However, there were comments that probably teleworkers' job satisfaction may improve while the others' job satisfaction may decrease because telework may complicate their work. The attractiveness of work was also evaluated to improve in half of the answers but the decrease in social relations may also cause some decrease in the attractiveness of telework. In addition, The social relationships of the workplace were believed worsen in most cases, and half of the respondents thought that also the social relationships with interest groups worse.

The status of teleworker was experienced to change negatively in most answers. It may be due to "out of place, out of mind" thinking, envy or the lack of trust. Instead, the relation with the managers was experienced to stay unchanged, if it would need more attention. Teleworking was experienced to increase the teleworker's commitment to work but it may also decrease it if the teleworker experiences to be as an outsider in the work society.

Recruiting in the organisations would remain unchanged or improve while telework is used. The improvement may be due to better attractiveness and competitiveness. In most cases telework was also experienced increasing the flexibility of the organisation's activities, which may be due to better planning. But there was also a suspicion that it may decrease it because of more complicate reachability.

As a summary, it can be discovered that the answers of the administrative survey were consistent with information of literature review. The attitudes seem to varying depending on the organisation. A reason may be different kind working cultures. Therefore, it is not enough if only the viewpoint of the potential teleworker is considered when teleworking is planned. The situation has to be considered comprehensively because telework of only one person may influence also in the duties of the others. The bigger is the amount of telework the bigger are its influences on the environment.

4.3 Summary

In the department of Computer Science and Information Systems in the University of Jyväskylä a typical educating person is 30 - 39 years old man, who lives at a distance of 2 kilometres from the workplace in the population centre of Jyväskylä. He has a workroom and Internet connection at home. He usually uses his own car while commuting to the office but sometimes he also walks or cycles.

He has a personal computer at work and he can use it and general programs well. He has worked at the university over 8 years and before he had worked one year somewhere else as a teacher. When he communicates with colleagues and students, he uses mainly e-mail but the use of telephone and different kind face-to-face communication modes are typical for him, also.

The educating person has teleworked before. He is most interested in teleworking at home or some other private premises, or teleworking place independently. Because he lives near the workplace, he is not interested in other forms of telework, like working in the telecottage or satellite office. He retreats to telework when he wants to work in peace. Typically he teleworks 1 - 2 days per week when he has to plan, prepare education, lectures, or demonstrations, or when he has to read something carefully. Research is also most pleasant to do at home because unnecessary interruptions are eliminated there.

However, the teleworker do not like to close in his teleworking place. In addition to the computer, he wants to have a connection to Internet and his own e-mail and files in the network of the university. He wants also to have a telephone but a fax is useless. He needs the network connection typically less than four hours per day, only to check his e-mail or search for information. The teleworking day is almost same kind than the day in the office. There may be only little changes concerning the breaks and the starting and ending times of working.

The educating people wants to attend to his work carefully, therefore the most important driving factors of telework are clearly connected to working. They are:

1. More intensive use of time
2. Possibility to personal timetable
3. Possibility to choose working place
4. Earlier experiences in telework
5. Change in working environment
6. Workroom at home
7. Increase in independence of work

However, the communication with the workmates is an important part of work, therefore the most restraining factors also are strongly related to work and arrangement for it:

1. Changes in social relations
2. Changes in flow of information
3. Changes in occupational contacts
4. Possibility to get feedback
5. Attitude of other workers

The educating people of the department of Computer Science and Information Systems appreciate independent management of work. Therefore, most the positive consequences of telework are the factors that enable individual controlling of work:

1. Flexibility of personal timetable
2. Peace of working
3. Independence of working
4. Work motivation
5. Work enjoyment
6. Productivity of work
7. Quality of work
8. Relation to the family
9. Commuting
10. Developing of yourself

As the social factors are the restraining factors of telework, they are also the negative consequences of it:

1. Visibility at workplace
2. Support services for work
3. Flow of information
4. Working in groups
5. Relations to fellow workers
6. Getting feedback and support
7. Status in work society
8. Action of work society
9. Reachability

In summary, the educating person of the department is interested in telework because it provides the possibility to work in peace. As a consequence of better concentration the creativity, quality and productivity of work increases and the results of work improve. In addition to the interesting, the teacher has quite good abilities to telework: existing techniques, skills required, and the common acceptance of telework in the work society.

Instead, when telework is considered in the scale of the university there will be more shortage of techniques required and, probably, the shortage of skills needed, also. In addition, the general attitude to telework seems to vary a lot between the departments and organisations. But regardless of the organisation, the advantages of telework, like possibility to work in peace, are recognised similarly.

5 DISCUSSION

At the beginning of the study the four main question concerning the goals of the study were stated:

- 1) What are the factors that drive or restrain telework of the educating people?
- 2) How the educating people experience telework to influence (possibilities and threats)?
- 3) How the attitudes and beliefs of the educating people differ from the results of the earlier studies?
- 4) How telework could be used at the department?

In this chapter the answers to the questions are gathered but before the answering it is necessary to consider the issues, which may influence in the interpretations of them.

Response rate of the personnel survey (74,4 %) enables drawing of conclusions in the scale of the department and, thus, the reliability of the study can be said to be good. Instead, the generalisation of the result concerning all educating people of the university is not possible because the teachers of the Department of Computer Science and Information systems very likely differ from many others especially concerning their skills of information and communication technologies. Also, the organisation cultures in the departments may vary a lot. For example, in the results of the administrative survey the opinions concerning minimum presence of the educating people at the workplace were divided in two main groups. Part of the organisations did not accept any teleworking days whereas some other accepted 2 - 4 teleworking days per week depending on work situation. Therefore, it is important to remember that any generally applicable guidelines cannot be created concerning telework in the different departments of universities.

The response rate of the administrative survey (25 %) was too small to have any statistical conclusions but some discoveries concerning possible varieties can be done.

The use of the two different kind survey methods (telephone and mail survey) did not seemed to cause remarkable changes in the result of the personnel survey. There were

only few differences that can be explained by the survey methods. Instead, the most probable reason for varieties was a coincidence that was due to the small amount of the respondents in the mail survey.

The small amount of the respondents in the whole study also produced some problems with the crosstabulations: some frequencies were too small to be used for comparisons. For example, there were only few respondents with the long daily way to work and, thus, any reliable results could not get concerning this factor.

Although the survey method was mostly quantitative, the issues of the questions were mostly qualitative and difficult to measure. Therefore the validity of the study is much more difficult to qualify. However, there were some questions that can be supposed to be connected together, and comparison of those results enables observing possible problems with the validity. Also, the telephone survey enabled more versatile impressions about the attitudes and interpretations of the respondents because several respondents thought aloud during the interview.

In summary, it is important to remember that there were only few factors that did not divided the opinions of the respondents. Often there were only few different opinions against the mainstream but sometimes the distribution was quite strong. Therefore, it is important to remember that all implementations of telework have to be considered case by case, which enables considering of individual situations.

5.1 Q 1: What are the factors that drive or restrain telework of the educating people?

The seven factors are clear driving factors of telework in the department:

1. More intensive use of time
2. Possibility to personal timetable
3. Possibility to choose working place
4. Earlier experiences in telework
5. Change in working environment
6. Workroom at home
7. Increase in independence of work

Based on the previous studies the driving factors were expected. The three first are the most important factors. Except one, the driving factors are related to working and especially its arrangement. The different kind factor was "Earlier experiences in telework", which only demonstrates that earlier experiences concerning telework have been positive. The other six factors are also connected together by the idea of possibility to work in peace. The situations, where interrupts are minimised, are important when researching.

On the other hand, there can be discerned the desire to manage own work and time used it. Also it enables better possibility to work in peace, while it also may decrease work related stress and general well being of the person because he can adjust working to his own lifestyle and tempo. Also this may go far towards creativeness that is important part of research process.

The most restraining factors are also strongly related to work and its arrangement:

1. Changes in social relations
2. Changes in flow of information
3. Changes in occupational contacts
4. Possibility to get feedback
5. Attitude of other workers

These factors concern the social relations and the flow of information in the workplace, and their changes may influence the position of the person in the work society and person's image of himself. Perhaps, these things are anticipated to change negatively while teleworking and, therefore, they are restraining factors of telework.

Both the driving and restraining factors are typical influencing factors. Instead, according to the results of this study it seems that daily way to work is not so meaningful factor but the result may be due to the small amount of the samples with long daily way to work. Also, the meaning of family was smaller than expected. According to this result, it is possible to ask "Are Finnish workers more devoted to work than Singaporeans or Americans?" Or is the result a consequence of large proportion of the males in the sample?

5.2 Q 2: How the educating people expect telework to influence their work?

The ten factors were experienced to change positively while teleworked:

1. Flexibility of personal timetable
2. Peace of working
3. Independence of working
4. Work motivation
5. Work enjoyment
6. Productivity of work
7. Quality of work
8. Relation to the family
9. Commuting
10. Developing of yourself

The possibility to influence own working is highlighted. Especially it is notable that the list of positive consequences also indicates the need for peace of working. The flexibility of the personal timetable and the possibility to work in peace very likely improves also the productivity and especially the quality of work and as a result the work motivation and also work enjoyment may improve. Probably, both the

improvements in work motivation and work enjoyment are due to the improvements in the three first factors.

Although the family and commuting do not seem to be as motivating factors, they are experienced to change positively while teleworking.

As it was supposed, the changes in the social elements of work are the most negative consequences of telework:

1. Visibility at workplace
2. Support services for work
3. Flow of information
4. Working in groups
5. Relations to fellow workers
6. Getting feedback and support
7. Status in work society
8. Action of work society
9. Reachability

5.3 Q 3: How the attitudes and beliefs of the educating people differ from the results of the earlier studies?

On the whole, the results of this study are consistent with the conception that can be found in the theoretical background. The advantages founded in the earlier studies are also mentioned to be as advantages in this study and disadvantages are mentioned to be as disadvantages. Based on the literature, it is difficult to create a clear picture about the order of importance of the different factors but there were two other studies concerning telework of computing people that included more exact results. Next they are compared to the results of this study.

The results of the three different study concerning motivational factors can be tried to compare with each other by classifying them according to the categorisation of Beasley and Lomo-David and calculating the means for the groups by using the numbers of the study in question (TABLE 16). After that the groups can be arranged in the order of importance and the orders can be compared.

TABLE 16. Categorised motivational factors (* Used in more than one class)

	Study of Beasley and Lomo-David in the U.S. (2000)	Study of Teo, Lim & Wai in Singapore (1998)	This study in Jyväskylä (Factors with positive mean included)
Family	<ul style="list-style-type: none"> - More time with their children - More time with their spouses - Ability to combine home upkeep with job requirements 	<ul style="list-style-type: none"> - When I have children - When I get married - When I am pregnant - When my children start schooling - When I have to take care of my aged parents or when my parents fall ill 	<ul style="list-style-type: none"> - Family
Work environment	<ul style="list-style-type: none"> - Flexibility in work hours - Time it saves them travelling to and from work - Overall job satisfaction - Freedom to work alone and undisturbed - Ability to wear whatever clothes they wish while working - Ability to do work at home that they do not have time to do at the office - Ability to control the temperature of their work environment - Ability to avoid difficult coworkers - Ability to avoid difficult bosses 	<ul style="list-style-type: none"> - Flexible working hours - When I want to reduce transport time or save transport costs or avoid traffic congestions* - When I want to get out of the work environment or when I do not feel like going to office 	<ul style="list-style-type: none"> - More intensive use of time - Possibility to personal timetable - Possibility to choose working place - Change in working environment - Workroom at home - Changes in reaching - Need to use new technologies and programs - Increase in independence of work - Possible part-time work - Information security
Health	<ul style="list-style-type: none"> - Lower work-related stress - Ability to eat home-prepared food rather than fast food - Ability to take a nap or short rest in the middle of the day when needed 	<ul style="list-style-type: none"> - When I become old and frail 	<ul style="list-style-type: none"> - Load of work
Economics	<ul style="list-style-type: none"> - Save money on transportation - Save money on child care expenses - Save money on clothing, cologne, perfumes, etc. 	<ul style="list-style-type: none"> - When I want to reduce transport time or save transport costs or avoid traffic congestions* 	<ul style="list-style-type: none"> - Costs of commuting
Traffic	<ul style="list-style-type: none"> - Avoid daily struggle with traffic - Avoid traffic catastrophes - Avoid traffic citations and arrests 	<ul style="list-style-type: none"> - When I want to reduce transport time or save transport costs or avoid traffic congestions* 	<ul style="list-style-type: none"> - Daily way to work
Crime avoidance	<ul style="list-style-type: none"> - Reduce the chances of daytime burglary of residence - Reduce the chances of being mugged on the way to and from work - Reduce the chances of being car-jacked to and from work 		
Personal Interests	<ul style="list-style-type: none"> - Use company equipment to pursue personal interests 	<ul style="list-style-type: none"> - When I want to pursue further studies - When I have to attend to my personal needs 	

However, it is very problematic to classify the factors from the different studies and the different cultures because there may be factors that include more issues in one question like the factor "When I want to reduce transport time or save transport costs or avoid traffic congestions" in the Singaporean study. In the categorisation that kind factors are placed in all of those classes that they can be imagined to be included because they cannot be divided into separate parts anymore. Also, a simple factor, like the "When my children start schooling" can be understood in many ways. It can be a question of flexible time arrangement, family, or economics. The perspective may depend on the culture or the individual who was answered. That kind factors are situated by intuition in this comparison. In addition, in this study there were some factors that cannot be placed in any of those classes. These kind of factors were the "Earlier experiences of telework", "Increasing need of organisation", and "Friends stories about telework".

The orders of the groups are presented in Table 17. However, the comparison is only approximate because the factors of the studies were very different. The result depend mostly what was questioned and what was not questioned. For example, if the issues of workroom, reaching, introduction of new technologies, independence of work, information security and possible part-time work would be left out the mean of the group "Work environment" would be 0,99 whereas now it is 0,65.

TABLE 17. Orders of the groups of motivational factors of telework in the three study

	Study of Beasley and Lomo-David in the U.S. (2000)	Study of Teo, Lim & Wai in Singapore (1998)	This study in Jyväskylä
1.	Family	Family	Work Environment
2.	Work Environment	Economics & Traffic	Health
3.	Health	Work Environment	Economics
4.	Economics	Personal Interest	Traffic
5.	Traffic	Health	Family
6.	Crime Avoidance		
7.	Personal Interests		

However, it is clear that in the two previous studies the family was the most important motivating factor of telework, while in this study it is work environment. Instead, according this study the family is the least significant driving factor of telework. The

result supports the idea of Finnish workers' high commitment to the work. The work is significant part of his life and he also want to manage it well.

The advantages of telework are presented in Table 18. There are the results only from the study of Teo, Lim and Wai in Singapore and the results of this study because the study of Beasley and Lomo-David did not include the results from this viewpoint.

TABLE 18. Advantages of telework

	Study of Teo, Lim & Wai in Singapore (1998)	This study in Jyväskylä
1.	Avoiding hassle of commuting	Flexibility of personal timetable
2.	Saving on commuting time	Peace of working
3.	Having autonomy over my own time schedule	Independence of working
4.	Possibility to work during hours when I am most productive	Work motivation
5.	Transport cost saved will be substantial	Work enjoyment
6.	Learning to plan and organise my time better	Productivity of work
7.	Favourable effects on relations with my children	Quality of work
8.	Keeping my job and look after my children at the same time	Relation to the family
9.	Improving in my morale because I feel treated as a responsible professional	Commuting
10.	Quality of work life will improve	Developing of yourself

In the Singaporean study the commuting and things related to it seemed to be the most significant positive consequences of telework, while in Jyväskylä the most important issues are relating to work and its arrangement, which was the second important group of factor in the study in Singapore. Commuting is the ninth important advantage of telework in Jyväskylä. A very likely reason for that is the difference of cities. The respondents of Jyväskylä lived mostly more near than five kilometres from the workplace and traffic probably is more fluent in Jyväskylä than in Singapore. Influence on the family is nearly equal in both studies.

The results concerning the disadvantages of the studies in Jyväskylä and Singapore are compared in the Table 19. Both studies supported the theory that teleworking may negatively influence the social relations of workplace and, perhaps, also decrease the power of teleworker.

TABLE 19. Disadvantages of telework

	Study of Teo, Lim & Wai in Singapore (1998)	This study in Jyväskylä
1.	Missing out on peer interaction which is critical for my professional development	Visibility at workplace
2.	I am likely to be required to share office workspace	Support services for work
3.	My office workspace will be reduced	Flow of information
4.	My interactions with business contacts will be reduced	Working in groups
5.	I will miss out on technical discussions important to development of technical expertise	Relations to fellow worker
6.	I am likely to lose my workspace in the office	Getting feedback and support
7.	Participation in meetings may be difficult to schedule because of reduced time spent in the workspace	Status in work society
8.	I will have problems getting access to reference materials	Action of work society
9.	My career development will be adversely affected due to reduced physical presence in the workplace	Reaching of you
10.	I will likely be passed over at promotion time because my supervisor does not see me often enough	

5.4 Q 4: How telework could be adopted at the department?

As mentioned in the strategy of the university, it likes to be as a pioneer in the development in the society. The concept of telework has already existed for a long time but the use of telework seems to progress quite slowly. However, this study indicates that there are real need and, also, desire to use it by the employees. Not only the individuals but also the organisation can benefit from it as a result of the better quality and productivity of work.

However, the introduction of telework requires careful planning because there are also some remarkable disadvantages, like the problems with the flow of information and social relations of co-workers. Also, the new division of tasks may be needed and, therefore, the whole of the work society has to participate to the implementation process from the beginning to the end. However, the actions have to be considered case by case always. For example, small-scale teleworking, like 1 - 2 days per month, probably does not require any special actions or planning. The boundary may be there where

teleworking of one or more people start to influence to the common practices of the organisation.

However, by allowing telework and planning it carefully it might also be possible to improve the working conditions in the whole organisation. For example, the flow of information may improve remarkable because information has to be available outside of the coffee room. It also facilitates the situation of other people who cannot be present for one reason or other. For example, the professors may be outside a lot but they need this information of the organisation anyway. The other possible situation occurs when the person has to be away because he is ill. If teleworking is applied successfully, he can still access important information when he comes back to the office or even while he is at home.

Because the educating people of the department of Computer Science and Information Systems have good skills of ICT they are potential pioneers of the introduction of telework. The use of technology needed will not produce extra obstacles for them and, therefore, they can be the first, brave experimenters who can clear the arena for new attitudes and ideas. In addition, work of the educating people is mostly measured by the productivity, not time and, therefore, they will be spared from the troubles of the renewal of new fee systems.

The students of the department are also technologically oriented and it is quite common that they are working also. It is also possible that they work in the other city. Because of life long learning this kind of situations may be more and more common in the future. During the interview one respondent wondered, why he should be present if his students are away.

Based on this study, telework can be really seen as a new innovative tool for the new kind of work arrangement like Pekkola said. It can improve the work conditions of employers and improve their wellness at work. But at the same time the attention have to be paid to the threats of telework, and it is necessary to ensure that the good enough flow of information and the adequate possibilities to communicate with the colleagues are assured. The ideal situation would be that innovative face-to-face conversations and possibilities of work in peace alternates just enough. Of course, there have to be time for

teaching and administrative works, also. Telework requires more energy to planning but it may be beneficial, also. Perhaps, the feelings of continuous hurry will relieve when there are place and time agreed for the tasks. Telework is also the question of working culture. The rules and norms for it have to be created in order to it could be utilised successfully.

6 CONCLUSIONS

The results of this study indicates that telework can be a proper tool to improve the work conditions of the educating people in the department of Computer Science and Information Systems in the University of Jyväskylä. The educating people want possibilities to work in peace and home-based telework may periodically provide better opportunity for that. On the other hand, some of them also have lot of business trips and by the development of teleworking methods their working can be facilitated during the trips.

Probably the situation may be same kind in some other departments of the university, because work of university teachers is probably quite similarly. However, the local organisation culture has to be considered before the introduction of telework. As well, the transportability of the results may be quit good to the other universities, too. However, weaker skills of ICT and the slighter accessibility of the technology needed will produce some additional challenges in some organisations. This study reflects mostly the attitudes and needs of the educating people in the department of Computer Science and Information Systems in the University of Jyväskylä but the results may help to consider if telework could be useful tool for other departments and universities, also.

It also seems that the motivating factors as well as the advantages and disadvantages of telework are consistent globally. Only some differences in order of the most important factors can be discovered. Probably, those differences are due to the cultural and environmental differences of the countries.

If an organisation would like to introduce telework, in addition to this results, some additional surveys have to be performed before the widespread utilisation. For example, the viewpoints of the other members of the staff have to be considered because widespread teleworking will influence in work of them, also. When the existence situation is known well the needed chances can be found and new working practices and teleworking policies can be agreed. By including the whole staff in the implementing process its success is more obvious.

This study differs from the previous studies in the U.S.A and Singapore in the picture of the respondents. Even though all of them are the professionals of the information and communication technologies the job descriptions of them may be quite different. It would be interesting to have comparable information about the other computing people in Finland. Is work the most important motivating factor for all of them? Is the meaning of family always as low as in this study? Did the larger proportion of the males influence the results of this survey? Anyway, the answers to the questions do not influence the utilisation of telework in the Department of Computer Science and Information Systems in the University of Jyväskylä. In addition, telework can be never utilised automatically without any case-by-case considerations. There is too much factors that are dependent on the individual or organisational properties that influence the usefulness of telework.

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APPENDIX 1. The Questionnaire for the Teachers

Ensin yleisiä asioita:

- (1) Minkä ikäinen olette?
- (2) Oletteko mies vai nainen? () Mies () Nainen
- (3) Asutteko
 - (a) Jyväskylän kaupungin taajama-alueella
 - (b) Muun kaupungin taajama-alueella
 - (c) Muussa kuntakeskuksessa
 - (d) Haja-asutusalueella vai
 - (e) Jossain muualla. Missä?
- (4) Onko teillä Internet-yhteys kotona?
 - () kyllä: (5) Käyttekö sitä itse? () kyllä () en
 - () ei
- (6) Jos saisitte yliopiston Internet-yhteyden kotiinne, haluaisitteko myös muiden perheenjäsenten voivan käyttää sitä? () kyllä () ei
- (7) Onko teillä erillinen työhuone kotona? () kyllä () ei
- (8) Kuinka pitkä on päivittäinen työmatkanne yhteen suuntaan kilometreissä? km
- (9) Miten kuljette työmatkanne useimmiten. Voitte valita useita vaihtoehtoja?
 - (a) Omalla autolla / moottoripyörällä
 - (b) Toisen kyydissä autolla / moottoripyörällä
 - (c) Junalla
 - (d) Linja-autolla
 - (e) Pyörällä
 - (f) Kävellessä / juosten vai
 - (g) Jotenkin muuten. Miten?
- (10) Työskenteletkö työmatkan aikana?
 - () kyllä
 - () en
- (11) Käyttekö työssänne tietokonetta?
 - () kyllä: (12) Onko tietokone
 - (a) vain omassa käytössänne vai
 - (b) yhteisessä käytössä jonkun muun kanssa?
- (13) Onko käyttämänne tietokone
 - (a) pöytäkone vai
 - (b) kannettava tietokone?

Seuraavat kysymykset koskevat tietokoneen käyttötaitojanne niin kotona kuin myös työssä. Kuinka määrittelette omat taitonne seuraavissa asioissa asteikolla hyvin - kohtuullisesti - heikosti - en ollenkaan - vaikea sanoa?

	hyvin	kohtuullisesti	heikosti	en ollenkaan	vaikea sanoa
(14) Osaatko käyttää jotain tekstinkäsittelyohjelmaa?					
(15) Osaatko käyttää jotain taulukkolaskentaohjelmaa?					
(16) Osaatko käyttää jotain ryhmätyöskentelyyn tarkoitettua ohjelmaa?					
(17) Osaatko käyttää jotain oppimisympäristöä?					
(18) Osaatko käyttää jotain virustentorjuntaohjelmaa?					
(19) Osaatko kopioida tiedostoja levyille?					
(20) Osaatko itse asentaa tai päivittää ohjelman koneellenne?					
(21) Osaatko käyttää internetiä sivujen katseluun?					
(22) Osaatko täyttää lomakkeita internetissä?					
(23) Osaatko kopioida tiedostoja internetistä omalle koneellenne?					
(24) Osaatko tehdä perusinternetsivuja?					
(25) Osaatko käyttää jotain sähköpostia?					

Seuraavat kysymykset koskevat nykyistä työtänne.

- (26) Mikä on ammattinimikkeenne?
- (a) Professori
 - (b) Yliassistentti
 - (c) Lehtori
 - (d) Assistentti
 - (e) Yliopiston opettaja
 - (f) Tutkija
 - (g) Jokin muu, mikä?

- (27) Kuinka kauan olette työskennellyt Jyväskylän yliopistolla?

- (28) Kuinka kauan olette työskennellyt opetustehtävissä kaiken kaikkiaan?

Etätyöllä tarkoitetaan työskentelyä, joka tapahtuu etäällä. Etäisyys voi esiintyä työntekijän ja työnantajan tai asiakkaan välillä tai se voi esiintyä työryhmän eri jäsenten välillä.

Tässä kyselyssä etätyöllä tarkoitetaan varsinaisen työpaikan ulkopuolella tehtävää työtä, joka korvaa säännöllisenä työaikana työpaikalla tehtävän työn. Se voi olla joko täysiaikaista tai osa-aikaista, esim. kolme päivää etätyöskennellen ja kaksi päivää toimistolla. Etätyötä ei kuitenkaan ole työpäivän päätteeksi kotona tehty ylityö.

- (29) Oletteko joskus tehnyt työtä etätyönä? () kyllä vai () en

Seuraavaksi esitän teille erilaisia etätyöskentelyvaihtoehtoja. Miettikää tarkasti, kuinka kiinnostuneita olisitte etätyöskentelyn eri vaihtoehtoista ja vastatkaa asteikolla: Erittäin kiinnostunut - Kiinnostunut - Vain hiukan kiinnostunut - En ollenkaan kiinnostunut.

	Erittäin kiinnostunut	Kiinnostunut	Vain hiukan kiinnostunut	En ollenkaan kiinnostunut
(30) Etätyöskentely kotona tai muussa yksityisessä tilassa, kuten loma-asunnolla.				
(31) Etätyöskentely kodin lähellä rakennuksessa, jossa on työntekijöitä eri organisaatioista				
(32) Etätyöskentely kodin lähellä rakennuksessa, jossa on muitakin työntekijöitä Jyväskylän yliopistolta.				
(33) Etätyöskentely jonkun muun organisaation toimistossa.				
(34) Etätyöskentely paikasta riippumattomasti, esimerkiksi matkustaessa.				
(35) Olisiko olemassa jokin muu tapa, mikä?				

Kuinka paljon käytätte eri kommunikointimuotoja työssänne? Määritelmää kommunikointitavan yleisyys asteikolla erittäin usein - usein - satunnaisesti - harvoin - en juuri koskaan

	Erittäin usein	Usein	Satunnaisesti	Harvoin	En juuri koskaan
(36) Puhelin					
(37) Sähköposti					
(38) Kasvokkain keskustelu työhuoneessa					
(39) Kasvokkain keskustelu kokouksissa					
(40) Kasvokkain keskustelu kahvitauolla / ruokatauolla					
(41) Videoneuvottelu					
(42) Kirje					
(43) Fax					
(44) Jokin muuten, mikä?					

Seuraavassa jaotellaan opetushenkilöstön työtehtävät viiteen osa-alueeseen, joita jokaista käsitellään vuorollaan. Osa-alueet ovat: Koulutus, Tutkimus, Taiteellinen toiminta, Yhteiskunnalliset palvelut ja Tukitoimet. Nyt kysyn jokaisesta osa-alueesta vuorotellen muutaman kysymyksen.

Koulutus, johon kuuluvat esimerkiksi luento-opetus, demonstraatiot, tenttien korjaus, harjoitustöiden tarkistus, opetuksen suunnittelu ja valmistelu, kommunikointi ja opintojen ohjaus.

(45) Kuuluuko työhönne jotain koulutukseen liittyvää? () kyllä () ei

(46) Luetelkaa, mitä koulutukseen liittyviä tehtäviä haluaisitte tehdä etätöinä?

Tutkimus, johon kuuluvat esimerkiksi aineiston keruu ja käsittely, suunnittelu, tutkiminen, kommunikointi, asiantuntijalausuntojen antaminen sekä konferensseihin valmistautuminen ja osallistuminen.

(47) Kuuluuko työhönne tutkimustoimintaa? () kyllä () ei

(48) Luetelkaa, mitä tutkimukseen liittyviä tehtäviä haluaisitte tehdä etätöinä?

Taiteellinen toiminta, johon kuuluvat esimerkiksi materiaalien hankinta, suunnittelu ja tuottaminen.

(49) Kuuluuko työhönne taiteellista toimintaa? () kyllä () ei

(50) Luetelkaa, mitä taiteelliseen toimintaan liittyviä tehtäviä haluaisitte tehdä etätöinä?

Yhteiskunnalliset palvelut, johon kuuluvat esimerkiksi ulkoinen tiedotus, asiantuntijalausunnot ja yliopiston ulkopuolinen ryhmätyöskentely.

(51) Kuuluuko työhönne yhteiskunnallista palvelua? () kyllä () ei

(52) Luetelkaa, mitä yhteiskunnalliseen palveluun liittyviä tehtäviä haluaisitte tehdä etätöinä?

Tukitoimet, johon kuuluvat esimerkiksi laitteistotehtävät, yleinen suunnittelu ja kehittäminen ja luottamustoimet.

(53) Kuuluuko työhönne tukitoimia? () kyllä () ei

(54) Luetelkaa, mitä tukitoimiin liittyviä tehtäviä haluaisitte tehdä etätöinä?

Jos halusitte tehdä etätöitä ainakin yhden tehtävän yhteydessä, vastatkaa kysymyksiin 57 – 62.

(55) Kun ajattelette niitä tehtäviä, joita haluaisitte tehdä työpaikkanne ulkopuolella, tarvitsisitteko työskentelyyn muualla seuraavia välineitä? Vastatkaa kyllä tai ei. [Kyllä (x), Ei (-)]

(a) __ Tietokonetta

(b) __ Yhteyttä käyttämiinne tiedostoihin yliopiston tietoverkossa

(c) __ Yhteyttä yliopiston sähköpostiin

(d) __ Yhteyttä muualle internetiin

(e) __ Puhelinta

(f) __ Faxia

(g) __ Jotain muuta. Mitä?

Jos tarvitsette yhteyttä yliopistolle, internettiin tai sähköpostiin, vastatkaa myös kysymykseen 56.

(56) Kuinka paljon tarvitsisitte etätöskennellessänne tietoliikenneyhteyksiä yliopistolle tai internetiin?

__ h / etätöypäivä

(57) Kuinka useasti haluaisitte etätöskennellä? Voit vastata joko

__ päivä / vko tai

__ päivä / kk

(58) Kun ajattelette työtehtäviänne, olisiko edellä mainitsemanne etätöskentelymäärät mahdollisia käytännössä?

() kyllä

() ei

(59) Noudattaisitteko etätöypäivänänne samanlaista aikataulua kuin työskennellessänne työpaikalla?

() kyllä

() en: (60) Kuvailkaa lyhyesti, kuinka muuttaisitte aikatauluanne ja miksi:

Kaikille:

Miten seuraavat asiat vaikuttavat haluunne etätyöskennellä? Määritelmää vaikutus asteikolla: Vaikuttaa hyvin positiivisesti - Vaikuttaa positiivisesti - Ei vaikutusta - Vaikuttaa negatiivisesti - Vaikuttaa hyvin negatiivisesti.

	Vaikuttaa hyvin +	Vaikuttaa +	Ei vaikutusta	Vaikut taa -	Vaikuttaa hyvin -	eos
(61) Päivittäinen työmatka						
(62) Muutos työympäristössä						
(63) Mahdollisuus henkilökohtaiseen työrytmiin						
(64) Muutokset tavoitettavuudessa						
(65) Muutokset ammatillisissa kontakteissa						
(66) Muutokset sosiaalisessa kanssakäymisessä						
(67) Palautteen saantimahdollisuus						
(68) Ajankäytön tehostuminen						
(69) Työn kuormittavuus						
(70) Vastuukysymykset						
(71) Muiden työyhteisön jäsenten suhtautuminen						
(72) Muutokset tiedonkulussa						
(73) Työhuone kotona						
(74) Perhe						
(75) Aiemmat kokemukset etätyöstä						
(76) Tuttujen kertomukset etätyöskentelystä						
(77) Mahdollisuus valita työskentelypaikka						
(78) Muutokset työmatkakustannuksissa						
(79) Työn mahdollinen osa-aikaisuus						
(80) Työn mahdollinen määräaikaisuus						
(81) Työskentelyn itsenäisyyden lisääntyminen						
(82) Tietoturvallisuus						
(83) Kasvava työn organisoinnin tarve						
(84) Tarve ottaa käyttöön uusia tekniikoita ja ohjelmia						
(85) Vaikuttaako jokin muu haluunne etätyöskennellä? Mikä?						

Miten uskotte etätyöskentelyn vaikuttavan seuraaviin asioihin? Määriteltää vaikutus asteikolla: Vaikuttaa hyvin positiivisesti, Vaikuttaa positiivisesti - Ei vaikutusta - Vaikuttaa negatiivisesti - Vaikuttaa hyvin negatiivisesti.

	Vaikuttaa hyvin +	Vaikuttaa +	Ei vaikutusta	Vaikuttaa -	Vaikuttaa hyvin -	eos
(86) Työn tuottavuus						
(87) Työn laatu						
(88) Henkilökohtainen aikataulujen joustavuus						
(89) Työaika						
(90) Työstressi						
(91) Asema työmarkkinoilla						
(92) Suhde perheeseen						
(93) Työnteon kustannukset työntekijälle						
(94) Suhteet työtovereihin						
(95) Näkyvyys työpaikalla						
(96) Suhde esimieheen						
(97) Työntekoon liittyvät tukipalvelut						
(98) Muutos kotiympäristössä						
(99) Työn tietoturva						
(100) Työrauha						
(101) Työmatkat						
(102) Suhde opiskelijoihin						
(103) Asema työyhteisössä						
(104) Urakehitys						
(105) Tiedonkulku						
(106) Työyhteisön toimivuus						
(107) Mahdollinen työryhmätyöskentely						
(108) Työmotivaatio						
(109) Palautteen ja tuen saaminen						
(110) Ylityöt						
(111) Ammatillinen kehittyminen						
(112) Työyhteisön ilmapiiri						
(113) Yliopiston imago						
(114) Työnteon itsenäisyyden lisääntyminen						
(115) Itsenne kehittäminen						
(116) Sitoutuminen työhön						
(117) Yliopiston toiminnan sopeutumiskyky						
(118) Viihtyisyys työssä						
(119) Teidän tavoitettavuus						
(120) Vaikuttaisiko etätyöskentely johonkin muuhun? Mihin?						

(121) Määriteltää vielä lopuksi asteikolla 0-3, mikä on halunne etätyöskentelyyn. 0 tarkoittaa, ettette halua missään tapauksessa etätyöskennellä ja 3 tarkoittaa erittäin voimakasta halua etätyöskennellä.. ____

(122) Olisiko teillä jotain muuta sanottavaa aiheeseen liittyen. Nyt voitte sanoa vapaasti.

APPENDIX 2. The Questionnaire for the Administrative People

Yleisiä taustatietoja

- (1) Laitos:
- (2) Opetushenkilöstön määrä:
- (3) Koko henkilöstön määrä:

Etätyöllä tarkoitetaan työskentelyä, joka tapahtuu etäällä. Etäisyys voi esiintyä työntekijän ja työnantajan tai asiakkaan välillä tai se voi esiintyä työryhmän eri jäsenten välillä.

Tässä kyselyssä etätyöllä tarkoitetaan varsinaisen työpaikan ulkopuolella tehtävää työtä, joka korvaa säännöllisenä työaikana työpaikalla tehtävän työn. Se voi olla joko täysiaikaista tai osa-aikaista, esim. kolme päivää etätyöskennellen ja kaksi päivää toimistolla.

Etätyötä ei siis ole työpäivän päätteeksi kotona tehty ylityö.

- (4) Onko laitoksellanne tällä hetkellä etätyötä tekeviä opetusta antavia henkilöitä?
- (5) Onko laitoksellanne tällä hetkellä etätyötä tekevää muuta henkilöstöä?
- (6) Onko laitoksellanne keskusteltu aikaisemmin etätyöskentelyn soveltamisesta opettajien työssä? Jos on, mitä ajatuksia siitä on ollut?
- (7) Kuinka paljon teidän mielestänne opetushenkilön olisi vähintään oltava paikan päällä yliopistolla?

Kuinka uskotte etätyöskentelyn vaikuttavan seuraaviin asioihin laitoksellanne? Perustelkaa vastaukset. Miettiessänne vastauksianne, keskittykää opetusta antavaan henkilöstöön.

- (8) Työteho
- (9) Henkilökunnan työtyytyväisyys
- (10) Työn houkuttelevuus
- (11) Työpaikan sosiaaliset suhteet
- (12) Organisaation toiminnan joustavuus
- (13) Työn ja vapaa-ajan yhteensovittaminen
- (14) Työntekijän sitoutuminen työhön
- (15) Teknisen tuen tarve
- (16) Henkilöstön rekrytointi
- (17) Työhuoneet
- (18) Tiedonkulku
- (19) Työn ja jonkun muun työn yhteensovittaminen (esim. dosentit)
- (20) Tietoturvallisuus
- (21) Toiminnan taloudellisuus
- (22) Henkilöiden tavoitettavuus
- (23) Suhteet sidosryhmiin (esim. opiskelijat, kollegat muista organisaatioista)
- (24) Organisoinnintarve

(25) Laitteisto investoinnit (esim. puhelin, kannettava tietokone, tulostin...)

(26) Etätyöntekijän status muun henkilökunnan mielestä

(27) Työntekijä-esimies -suhde

(28) Yhteisten palaverien tarve

(29) Työn laatu

(30) Olisiko teillä mielessänne jotain muuta aiheeseen liittyen. Voitte kirjata ajatuksianne vapaasti.