Exploring More Productive Ways of Working

Jenna Ruostela, and Antti Lönnqvist

Abstract—'New ways of working' refers to non-traditional work practices, settings and locations with information and communication technologies (ICT) to supplement or replace traditional ways of working. It questions the contemporary work practices and settings still very much used in knowledge-intensive organizations today. In this study new ways of working is seen to consist of two elements: work environment (incl. physical, virtual and social) and work practices. This study aims to gather the scattered information together and deepen the understanding on new ways of working. Moreover, the objective is to provide some evidence of the unclear productivity impacts of new ways of working using case study approach.

Keywords—Knowledge work, new ways of working, productivity, work environment.

I. INTRODUCTION

THE number of knowledge workers has increased dramatically, as organizations have moved from manual production to a more knowledge-intensive business [1]. Today, knowledge workers are the fastest growing group of workers and they are the key assets in organizations in the contemporary business environment [2]. Since the success of contemporary companies relies mainly on knowledge workers improving their productivity and performance becomes the key factor in creating economic growth. This was noted already in 1999 by Peter Drucker, who claimed that *"The most important contribution management needs to make in the 21st century is to increase the productivity of knowledge work and knowledge workers."* This quotation has gained a lot of attention in the knowledge work literature ever since it was published and still appears in the majority of publications dealing with knowledge work productivity (see e.g. [1], [2], [3], [4], [5], [6], [7], [8]). This indicates that even though the importance of the issue is recognized, there have been no major advances in the methods for improving knowledge work productivity. One of the reasons for this is that the methods used today are still largely based on the same assumptions originating from manufacturing [9]. Thus, managers are still looking for ways to improve the productivity of their knowledge workers.

One possible way of improving the productivity of knowledge workers is to design the work practices, methods, and settings in a totally new way, i.e. to discard the old industrial mindset. "New ways of working" (Newwow) provides a novel approach for questioning the more traditional

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ways of working. New ways of working refers to non-traditional work practices, settings and locations with ICT to supplement or replace traditional ways of working [10]. It highlights the fact that in modern knowledge-intensive organizations work practices should be designed according to the requirements of the tasks at hand [11]. It also takes into account that the work settings should support the needs of an individual knowledge worker [12].

Despite the fast growing attention towards the concept, only few publications on the productivity impacts of new ways of working have been published [13], [14]. The impacts of these new working practices and settings are mainly approached from an organizational level considering the overall performance of firm [15], [16], [17]. This is partly due to the fact that the relevant issues, e.g. facility space needed, energy consumption and cost, are tangible and fairly easy to identify and measure. However, the literature lacks evidence of the productivity impacts of new ways of working at individual level, i.e. it is unclear whether the new practices actually make workers more efficient and effective. There is some evidence of the impacts of new ways of working on, for example, work-life balance and job satisfaction [16], [18] but the relationship between new ways of working and knowledge worker productivity is unclear and thus needs to be studied in more detail.

There are two main objectives for this study. First, the literature on new ways of working is scattered and lacks a comprehensive view on the subject. Hence, this study aims to deepen the understanding of the dynamics of new ways of working and productivity. Second, this study pursues to offer new empirical evidence of the impacts of new ways of working on individual knowledge workers' productivity, since the relationship between these two is somewhat unclear in the current literature.

The remaining part of this paper is organized as follows. First, knowledge work productivity is discussed shortly and the main challenges regarding it are introduced. After that, the concept of new ways of working is introduced followed by a more profound examination of our proposed twofold approach to new ways of working, including work environment and individual work practices. Section III focuses on the empirical examination, presenting the key findings. Finally, Section IV concludes the research and ties it together.

II. THEORETICAL BACKGROUND

A. Knowledge Work Challenges

The importance of knowledge work has been acknowledged in the literature and knowledge workers have gained a lot of attention in recent decades [19]. Knowledge work is commonly defined by the knowledge-intensiveness of the

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work since knowledge is the key resource of a knowledge worker [20], [21], [22]. Knowledge workers create, apply, share and acquire knowledge [3], [9], [23]. To put it short, knowledge workers "think for a living" [9]. Thus, knowledge worker's work day includes various tasks in which knowledge is in different roles, such as drawing in knowledge (by sharing knowledge), reflecting (thinking) and manipulating information (writing). These tasks form the productive time in knowledge work. [24]

However, the average day of a knowledge worker contains too little this productive time. Knowledge worker's work days are usually very fragmented and contain various different tasks, such as sitting in different kinds of meetings, commuting to meet customers and partners, reading and answering e-mails and so on. Thus, it contains very much unproductive, non-value-adding time. At the same time knowledge workers are argued to be the key to business growth [9] due to their innovativeness and creativeness [25]. The question is: when do they have time to actually be creative and reflective since their working days are so busy and disorganized? Another relevant question is: *why* are their days so busy and disorganized?

One issue causing challenges for the knowledge worker is the current information environment. The knowledge worker may suffer from distractions and information overload caused by, for example, multiple e-mails, social media, phone calls and instant messages [26]. The continuously developing field of ICT does not, of course, only create problems but also many opportunities for performing knowledge-related tasks more efficiently and effectively. However, taking full use of the potential may require changes in the ways work is organized.

The traditional office space cannot support the aforementioned various tasks of the contemporary knowledge workers. The office should at the same time meet the requirements of different kinds of individual and group tasks [27]. However, the traditional office environment is usually too restless for performing tasks that require concentration [28], [29]. Concurrently, it is argued that organizations lack spaces that support team work [27]. Thus, it seems that the office environment is a compromise that does not fully serve the purposes of any task.

One challenge is that knowledge workers are still very much being managed with methods that were developed in the industrial age [9]. Thus, the methods used for improving the productivity of knowledge workers are also inherited from the manufacturing era. Clearly, these methods are not applicable since knowledge work is very different from manual work [9], [30].

In addition, there are also some challenges in the productivity concept in knowledge work context. Traditionally, productivity is defined as the efficiency with which outputs are produced – the ratio between output and input [31], [32]. In knowledge work the idea remains the same although its application is more complex due to some differences between knowledge work and traditional manufacturing. Firstly, in knowledge work both inputs are

outputs are usually difficult to define [9]. One reason for this is that in knowledge work both the inputs as well as the outputs are usually intangible in nature [19], [33], [34]. Secondly, in knowledge work there is not necessarily a direct relation between input and output as there are several intervening variables [19], thus it is hard to recognize which outputs resulted from which inputs. Thirdly, the realization time of the actual impacts may also be fairly long, and especially in services this is a complex issue since the value of a service is manifested when it is used by the customers [19], [35], [36].

B. New Ways Of Working

New ways of working provides a novel and comprehensive approach to improve knowledge work productivity. New ways of working is not a specific approach but rather a philosophy for challenging the dominant ways of working and organizing work in the knowledge economy. It takes into account the various needs of knowledge workers and highlights the fact that the work settings and practices should be designed according to the requirements of different tasks.

New ways of working refers to non-traditional work practices, settings and locations with information and communication technologies (ICT) to supplement or replace traditional ways of working [10]. Thus 'new ways of working' is used to describe the ways of working that are dynamic and less closely linked to place and time, and is usually used to refer to such concepts as telework, multi-locational and mobile work, remote work, distributed work, virtual work, and global work [16], [37].

The dynamics of the contemporary business environment poses modern organizations challenges that both necessitate and enable new ways of working [34]. However, van Meel argues that so-called 'new ways of working' are by no means new as the term implies and actually originates from the 1970s [18]. For example, in a research project in 1973 teleworking was presented as a novel way to increase productivity, improve the work-life balance and reduce environmental impacts [18] - the same kinds of issues that are still very much in evidence. However these new ways of working were not widely adopted back then, mainly because the business environment, organizations and their managers, and technology were not ready or capable to offer this kind of flexibility. However, work life and business environment today it has become much more digital, loose, informal, flexible, and mobile [18]. The technology has advanced compared with the technologies used in the 1970s. At the same time the awareness and understanding of the nature and requirements of knowledge work have increased. These facts create a better starting point for managers of today to implement new ways of working. Since the technology and physical environment already enable the adoption of new ways of working, the only obstacle to the adoption of new ways of working is the outdated mindset of the managers and employees.

New ways of working is a multidisciplinary concept which is why the information concerning the issues related to new

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ways of working is scattered [34]. There are publications dealing with ICT-solutions [38], [39] and scholars who discuss about the physical environments [11], [40], [41]. Furthermore, the use of the concept of 'new ways of working' is not established and there are various other concepts discussing the same themes, for example Alternative workplace (AW) and Alternative Officing (AO) (cf. [42], [43]). Thus, the literature lacks a comprehensive view on the matter, and this study aims to provide it.

One of the key changes in the ways of working is shift in the physical place and location where the work takes place. Knowledge workers are no longer tied to a single location; instead, they are increasingly mobile, working more and more outside their offices, for example at customers' offices, home, "third places" (such as cafés and hotels) or on the road [38], [44]. The sufficient and mobile ICT tools have made it possible to work from different physical locations [42], which is why the virtual environment is a focal component in new ways of working. However, the adaptation of new ways of working needs a shift in the social atmosphere and, for example managerial culture, which are still mainly relying on manufacturing era. These three aspects form the three dimensions of work environment: physical, virtual and social [19].

However, an advanced work environment is not intrinsically valuable. Even though an organization provides the facilities and support for new ways of working, this does not necessarily lead to changes in the work practices of the workforce. Thus, the potential of new ways of working is also dependent on the individual workers and their way of utilizing the opportunity that the work environment provides. Hence, it is ultimately the employees' responsibility to utilize the potential of new work settings and find ways to work smarter. Next two sections take a more profound examination into work environment and work practices.

C. Work Environment

As introduced earlier, each workplace can be seen as an integration of embedded spaces consisting of the three spaces, physical, virtual and social [19]. *Physical space* refers to the physical work settings and location where work is accomplished [45]. Today the physical space can in addition to the traditional office be employees' homes, moving places such as trains or airplanes, other workplaces, such as customers' sites or so-called third workplaces, such as cafés or hotels [38], [44], [45]. Knowledge work contains various tasks, some of which are individual and some of which collaborative, which is why knowledge workers need different spaces and locations depending on the task at hand [11], [29]. For example, home provides a peaceful environment for conducting tasks that require concentration whereas an office serves the purposes of collaborative tasks [28].

Contemporary knowledge workers are increasingly mobile which leads to changes in the physical environment where the work takes place, since the personnel is not constantly present. New kinds of work settings, such as multi-use offices and shared workspaces enable more efficient space usage to avoid empty office space and unnecessary space costs [44], [46]. Multi-use offices consist of different spaces for different kinds of work tasks which enable selecting the space based on the task at hand [39], [46]. Thus, such dynamic use of different spaces can better support the requirements of various tasks of a knowledge worker [11]. Furthermore, mobility and flexibility of workers brings on changes in the function of traditional offices [28]. Since the work no longer necessarily takes place in traditional offices, the most important aspect of office buildings is their increasingly important social function enabling people to interact and collaborate [18], [28].

One of the key issues enabling the use of different locations is *virtual space* that supports the physical environment. Virtual space refers to an electronic working environment or virtual working space that consists of connections and devices (e.g. e-mail, video conference equipment, laptops) [45], [47]. Physical and virtual spaces are closely interrelated [48]. This means that different physical spaces have different needs for virtual space. For instance, mobile working usually requires a combination of IT networks and devices such as wireless internet connections and sufficient mobile phones [38]. On the other hand, different ways of working and different tasks also set various requirements for the virtual environment. For example, in collaborative work different virtual tools are needed, such as e-mail, voice, videoconferencing, chat, group calendar, document management and presence awareness tools [49].

When considering individual work efficient ICT resources allow knowledge workers to access corporate systems and to communicate with colleagues and, for example, customers, while on the move [38]. The use of such technologies enables more efficient use of time, for example, while travelling and commuting, which is why knowledge workers have been provided with mobile technologies in order to improve their productivity [50]. However, this continuous connectivity can also have some negative impacts, such as information overload and continuous mixing of work and personal time, which needs to be considered [26], [51].

In addition to virtual environment, the social networks and the *social environment* have an impact on the knowledge sharing within an organization [52]. Social space refers to cognitive constructs, thoughts, beliefs, ideas, and mental states that employees share [49]. It includes the social constructs and interaction relationships of employees such as collaboration and management [53]. Organizational culture has a significant role in new ways of working since it enables the adaptation of new working methods and therefore it needs to be considered how the organizational culture supports the new working arrangements [54]. At the same time organizations will need to consider how they can support the development of organizational culture and the sense of community since the employees are increasingly mobile and spend only little time in the office. They need to think how different kinds of physical and virtual environments can contribute to preserving the organizational culture and the social nature of work [28].

Social networks play an important role at workplaces, especially in knowledge work, since they affect the way

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people communicate and share knowledge [9]. With respect to the creation of these social networks, office buildings have an important social function [18]. Although knowledge workers like working from home occasionally they do not want their homes to be their only offices due to the social aspect of the physical offices. Office buildings are the intersections of knowledge sharing; a place where social networks are formed, tacit knowledge is exchanged and social capital built through interaction. [9], [18]. This emphasizes the importance of the social environment even though the working patterns are changing and work is becoming more mobile. Thus, new ways of working also poses new challenges for managers due to the use of different locations for working [55].

Physical, virtual and social environments form a complex whole, in which every dimension interacts with one another. Thus, they need to be examined as a whole and the dimensions need to be in balance with each other [52]. For example, when an organization decides to engage in mobile work, in addition to redesigning the physical space they need to consider how mobile work is enabled by the virtual tools and services. Furthermore, they need to consider how the company policies and culture support remote working and possibly make changes in their managerial practices. Thus, the most effective workplace development projects include changes in the physical workspace, information technology and management and culture [9]. However, the workplace development is not valuable, if the employees do not utilize the new possibilities the work environment offers. Thus, individual work practices play an important role in this complex.

D. Work Practices

Although the working environment sets certain boundaries for the knowledge worker within those boundaries there is a lot of room to carry out activities in various ways. For example, an individual may – or may not – be proactively seeking and applying productive ways to utilize ICT tools. Thus, many of the promises of new ways of working are dependent on the actions of individuals, even though the work environment also matters a great deal.

Knowledge work contains various work practices due to the many different tasks that can be characterized as knowledge work. It contains both individual tasks and collaborative tasks. Here, we emphasize work practices that are based on new ways of working.

One major phenomenon that has enabled the emergence of new kind of work practices is the development of technology. The development of ICT tools has made it possible for people to work regardless of time and location. Thus, it has enabled the emergence of *mobile work* [40], [29]. Such ICT-enabled mobile work facilitates more efficient use of time since employees can better utilize the otherwise idle, unproductive time, for instance while traveling (e.g. by train, or air) or waiting (e.g. in railway stations, in airport lounges) and be connected to others even when on move [38], [56]. Thus, mobility and high level of access to data can improve the productivity of the employees [50].

However, there are some challenges that employees need to overcome in order to utilize mobile working efficiently, for example in terms of adapting continuously to the changing environment and to using different kinds of technologies in order to be connected to colleagues and customers to minimize the consequences of decreasing amount of face-to-face interaction [55], [57]. Different places offer a different context for working in which available technology and communication infrastructures, noise levels and the available physical workspace vary ([56]). Thus, it highly depends on the employee's ability to utilize this possibility whether mobile work is productive or not.

Mobile work emphasizes the employees' autonomy and control of time and tasks [57] which are important in knowledge work. Since knowledge workers have usually a high degree of autonomy [30], their productivity is also dependent on their ability to manage their use of time and workload. Knowledge worker's work days are usually very fragmented and contain various tasks. Thus, in order to be productive, it is important that knowledge workers are able to prioritize and partition their tasks reasonably.

One challenge that comes up with the mobile work and continuous connectivity is information overload [26], [51] caused by e-mails, phone calls and, for example, social media. These increase the fragmentariness of the work day even more if knowledge workers are not able to manage the "information bombardment" somehow.

Flexibility is one of the most important objectives of new ways of working [58]. The need for flexibility occurs at many levels in the business environment. Employees require flexibility of their employers in order to improve their work-life balance. Similarly, the employees are expected to be flexible in their approach to their jobs and to acquire multiple skills that allow them to move flexibly between different activities. [11] From new ways of working perspective the most important forms of flexibility are time and location flexibility. Time flexibility refers to formal or informal agreements between employer and employee about working hours ([11]). This shatters the old-fashioned image of working from 9 a.m. to 5 p.m. originating from the industrial age. Naturally, it was reasonable back then when all the employees were needed simultaneously to the assembly line. Today, knowledge workers do not always need to be at the office at the same time and they can be present for example virtually.

Locational flexibility gives employees a chance to choose where they work including the option to work at home or at other locations. It emphasizes that employees are no longer tied to a single place of work but rather should strive to work in the most appropriate place for the task at hand. [11] This increased flexibility offers opportunities for employees to better handle their tasks ([59]). For example, working from home lets employees avoid interruptions caused by a restless office environment and carry out tasks that require concentration [29], [55]. It also offers an opportunity to choose when to work and when to have some personal time [57]. This in turn may enhance work-life balance. When the work is more flexible it is possible to spend more time at home, for example, when saving on commuting time [28],

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[57]. It is also argued that flexibility can have positive impacts on productivity [54], [60]. Flexibility can have both direct and indirect impacts: when employees are more satisfied their job performance is better, for example in terms of lower absenteeism; or from a more indirect perspective, flexibility may increase productivity via its positive influence on workers' job satisfaction [60].

III. EMPIRICAL STUDY

A. Goals for the Empirical Study

Based on the literature review section new ways of working seems highly potential approach for knowledge work productivity improvement. However, at present only few empirical studies on the issue are available. The current knowledge on the topic is very generic in nature and it is unclear how the various novel work practices fit to different organizational contexts. In other words, it is not clear which ways of working actually lead to productivity improvement in a given context. Surely, not all practices fit to all organizations nor produce similar productivity or welfare impacts.

This study pursues to offer new empirical evidence of the impacts of new ways of working on individual knowledge workers' productivity and shed light on the contextual issues involved. In particular, the analysis takes into account the two main aspects of new ways of working, i.e. the work environment as well as work practices.

B. Research Methods

This research was conducted as a case study with two companies. The data from both cases was collected using thematic interviews. Interviewing was chosen as the main data collection method as knowledge work productivity and related issues are ambiguous phenomena which can be comprehensively captured using a qualitative approach. Altogether 18 employees were interviewed, nine from both companies. The mains themes of the interviews were work environment (including physical, virtual and social environments) and work practices (including e.g. flexible and mobile work) and their impacts on their productivity. Next, the two case companies are introduced shortly.

Rapal Oy is an expert in the financial management of built environment. Rapal offers financial management products and services for owners, constructors and users of premises and infrastructure in order to help them make economically viable and environmentally responsible decisions. Rapal was established in 1991 and is owned by the personnel. In 2011, the net sales were over €5.4 million and the number of employees is about 60. Rapal carried out a newwow project during 2009 when their rental agreement expired. At the beginning of the project Rapal divided their employees into three different profiles (fixed, flexi and mobile) based on their ways of working and the related space and technological needs. Based on the profiling the optimal space need was calculated and different alternative facilities were explored. After deciding on the new location a new office layout was designed resulting in a multi-use office where the varying needs of different working profiles were taken into account. This project significantly improved the overall performance of the company reducing for example occupancy costs and carbon footprint. However, the impact of new ways of working on productivity of the workforce is still uncertain.

Granlund Oy is Finland's leading building services consulting firm. Granlund's core business areas are building services design, facility management consulting and the development and sale of facility management software. Granlund was established in 1960 as an HVAC (heating, ventilation and air conditioning) and plumbing design company. In 2011, the net sales were approximately €32.9 million. Granlund employs 360 experts in the fields of building services, facility management, and energy and environment consulting. Granlund is still at the beginning of its NewWoW project. Before this research the profiling phase of this project had been completed. Granlund's employees were divided into three profiles in the same way as Rapal's. However, the workspaces and working methods had not yet been designed on the basis of this information. Hence it is safe to say that the ways of working at Granlund are still evolving although they have the awareness of new ways of working.

Both organizations are knowledge-intensive and operate in the branch of built environment. Despite these similarities there are some differences between the case organizations that are significant in the light of this research. In addition to differences in the age and size of the companies, they are very different with respect to new ways of working. While Rapal has already been engaged in new ways of working for few years, Granlund is still at the beginning of their process of changing their ways of working. Thus, for the purposes of this research these companies are ideal. They are not different in a way that would compromise comparing the results of the cases but have dissimilarities which make them interesting for the purposes of this research.

C. Results

1) The Impacts of Work Environment

In both cases the physical space was perceived to have an indirect influence on employee productivity. The physical environment was usually considered to have an impact on productivity via job satisfaction or employees' motivation. It was reported that the physical environment may also affect the mood of the employees, which in turn affects productivity. Consequently, it can have both positive and negative effects on the productivity of the workforce.

According to both cases, the most important thing that needs to be considered in the physical work space is that it must support the work task at hand. It was noted that the physical space needs to meet the requirements of the task performed in the space. This means in many cases that there need to be different kind of spaces in the office to fulfill the different needs of different employees. According to one respondent the office space:

"[It] should enable different ways of working: working in groups, working alone. It should have a space for speaking on the mobile phone, or with Skype or space for arranging

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videoconferences."

According to the interviewees, employees should have options to use different workspaces so that they can choose the best place to work – this may also in some occasions mean working at home or other places outside the conventional office building.

The interviews show that there are various different spaces that are needed in order for the office space to fulfill the requirements of knowledge work. These spaces include:

- Individual work spaces
- Group spaces
- Meeting rooms for formal meetings and negotiations
- More casual places for having more creative meetings and brainstorming sessions
- Quiet rooms for tasks that require concentration and peace
- Appropriate space for more informal communication and ad hoc discussion
- Appropriate social spaces such as coffee lounges

In both cases the issues relating to open-plan spaces were highlighted. As for the positive impacts, the most often mentioned feature was that knowledge sharing and communication are easier in an open-plan office and this was perceived to be the major issue affecting productivity. On the other hand, noise and interruptions were commonly mentioned as the negative sides of an open-plan office impairing productivity.

Comparing the virtual environment with the physical environment the former was considered to have very different role from the productivity perspective. Virtual environment and virtual tools are particularly important in knowledge work since they are the key tools that are used for working. Therefore, in order to be productive knowledge workers need to be provided with sufficient tools. According to the interviewees in both case organizations, in many cases the virtual environment does not affect productivity positively. Instead, it is the minimum requirement without which knowledge workers cannot be productive. However, a virtual environment can have negative impacts when the tools do not work as they should or if there are problems, for example, with the internet connection as one interviewee pointed out:

"If the Internet does not work properly it's like a carpenter trying to work with a hammer made of rubber".

Since the case organizations have different kinds of workers including mobile workers the mobility of the virtual tools was one of the most emphasized aspects since it enables the communication regardless of the location of the employee. According to the interviewees, the systems need to support both internal and external mobility.

In both cases the social environment was considered to be the most important aspect affecting employee productivity, especially in a positive way. The social environment including, for instance, organizational culture, managerial and leadership culture, and overall atmosphere lays the foundation for productive knowledge work, although the physical and virtual environments should not be ignored. According to one

interviewee:

"It all starts with the social atmosphere. If there's a hang-up, it doesn't matter what you're doing here. Of course, the physical and the virtual environment need to support it, they cannot be forgotten."

Thus social environment is perceived to have the most significant impact on motivation and job satisfaction. One interviewee also stated that the overall atmosphere the employees create together plays an important role:

"I think that the most important thing affecting the productivity of people is the vibes, more than some physical environment or tools."

According to the interviewees, one of the most important productivity enhancing elements is well-defined goals and clear job descriptions. It was perceived that when managers are interested in their employees' well-being and continuously want to develop it, it improves productivity of the employees. Support for different ways of working was also considered important at both Rapal and Granlund. An open organizational culture and a good atmosphere were also seen to have a positive impact on productivity. It was also emphasized that there should be some common rules and procedures, for example, for different ways of working (such as remote work). One of the most important things affecting the well-being of the workforce and thus productivity, according to both cases, is recreational activities and other informal interaction between employees. Those were considered to enhance productive work in multiple ways.

2) The Impacts of Flexible and Mobile Work

Flexible work was considered to be one the main factor having a positive influence on productivity in both cases. According to the interviewees, flexibility may have both direct and indirect impacts on productivity. It can affect the satisfaction and motivation of the employees thereby improving productivity. Flexibility was also perceived to have an impact on the work-life balance, since it is to some extent possible to adapt the working time and place according to the requirements of the home. One interviewee also emphasized that flexibility should be seen as a two-way agreement:

"I would like to emphasize that we are always talking about what our bosses should do to improve employees' satisfaction so that they would enjoy their work more, but we also should take into account that that this new ways of working means that the employees also need to be flexible and trustworthy."

Using other locations for working is also one type of flexibility. There are generally two reasons for working at home and these were recognized in both cases. Firstly, it was considered that the environment at home provides a peaceful place for carrying out tasks that require sustained concentration. Accomplishing such tasks at the office is usually difficult (or even impossible) due to distractions. Thus, working at home can improve productivity in respect to these kinds of tasks by eliminating the distractions. Secondly, the interviewees saw remote working as a way to enhance the work-life balance since working at home affords more opportunities to take care of personal affairs in the middle of

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the day. Working at home was perceived to improve quality of life and motivate people and thus ultimately to improve productivity.

The interviews also revealed the impacts of "third time" on productivity. Thinking about work related issues at home was not necessarily seen as a bad thing. Instead, the interviewees noted that they might have some good ideas and find solutions to problems when not actively thinking about them as one interviewee pointed out:

"I tend to think and brainstorm at home - that cannot be turned off. And I think I usually get some good ideas. It feels that the workday is so hectic that when I get some distance from work, then I'll come up with the good ideas!"

Thus the subconscious processing of business issues can improve productivity. However, the interviewees stated that if the boundaries between work and personal time become too much obscured the effect may be counterproductive. Other locations are used (variably) in the cases. Browsing e-mails and preparing for the day at work, for instance by reading some documents are habitual activities during commutes. During longer business trips, for example, by train or air laptops are commonly used for carrying out some tasks. However, it was perceived that only certain types of tasks can be accomplished efficiently in such environments. Sometimes work can be conducted in cafés or, for example, on customers' premises to avoid unnecessary commuting and to make use of otherwise dead time, which in turn has a positive impact on productivity.

D. Analysis

The findings of this research mainly corroborate the results from earlier studies, especially when examined separately. The positive impacts of, for example, knowledge sharing in open-plan offices, importance of the correspondence of task and space, mobile work and flexibility have also been acknowledged in the literature [11], [29], [50], [54], [56], [61], [62], [63]. In addition, the negative impacts related to, for instance, distractions in open-plan offices and information overload have been discussed in the literature earlier [26], [51], [64], [65], [66], [67].

Research and practice have usually perceived new work practices in terms of the physical environment and virtual environment [41], [68]. Such a perspective usually overlooks the values, beliefs and culture that actually make it possible to utilize the potential of new ways of working. According to this research, designing a perfect virtual environment for mobile work, or creating a flexible office space is not sufficient if the management practices and culture do not support the very ideology of working with a new set of practices and methods. Furthermore, this study emphasizes that it is the individual's responsibility to utilize new ways of working. Even though the environment and culture enable new ways of working, it is the individual knowledge workers who need to make use of them.

Generally, both cases considered the same kinds of issues to be important as regards to productivity. It is even somewhat surprising that the same issues were highlighted in both cases although the starting points of the firms are very different with respect to new ways of working. However, considering the potential that new ways of working has for improving productivity, some significant differences can be identified between the case firms. Whereas at Rapal the potential of new ways of working relies on minor adjustments (such as more rules for using different spaces), at Granlund the potential is in more extensive changes in their ways of working (such as creating different spaces for different tasks) since many factors have not even been taken into account so far. This is because at Rapal many of elements of new ways of working are part of their work practices, whereas at Granlund they have not yet been taken into consideration. Therefore, at Rapal the potential focuses on developing the work practices further and making their ways of working more consistent and transparent. In contrast, Granlund should embark on a more radical development process where the practices and principles of new ways of working are adopted and implemented. However, both cases require a comprehensive approach to fully utilize the potential of new ways of working.

This full potential is not easily harnessed in a single change project. Visible changes can be made in a short time, but the changes required in the beliefs and values of personnel take more time to develop. Hence, as at Granlund the most important changes at this point entail greater and visible changes (for example in the physical environment) they can achieve significant improvements in a relatively short period of time. However, as Rapal has already made most of the visible changes and the potential of new ways of working relies on further developing the behavior, organizational culture and other socially constructed elements related to new ways of working, the potential will take more time to be fully utilized.

IV. CONCLUSION

This study had two main objectives: to deepen the understanding of the dynamics of new ways of working and to provide empirical evidence of the productivity impacts of new ways of working. The first goal was achieved by conducting a literature review that gathered the scattered information of new ways of working. The second target was met by case study that extended the knowledge on the productivity impacts of new ways of working.

To point out few key notions from the empirical research, the social environment was perceived to have a greater influence on productivity than the physical and virtual environments. In the literature the focus is usually on the other two dimensions, physical and virtual (see e.g. [47], [50], [61], [62], [68], [69], [70]). Furthermore, it was perceived that individual work practices play a huge role in increasing productivity via new ways of working. It is the employees' responsibility to utilize different work practices in order to work in a more productive way.

This study offered new empirical evidence of the subject that has not been studied much in the prior literature. Especially the impacts of new ways of working have not been examined at the individual level. Thus, this research provides some new insight into the subject. Moreover, this paper

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provided a novel approach to structure the diverse literature of new ways of working dividing the subject into two key areas: work environment and work practices. The work environment offers the possibilities to utilize new ways of working but is not intrinsically valuable; it is ultimately employees' responsibility to exploit the potential. Finally, the use of interviews proved to be a practical solution for capturing the productivity impacts in such a complex setting.

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