

The Implications of Digitalization for Job Descriptions, Competencies and the Quality of Working Life

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Abstract

Radio and television program production are being digitalized, but we are still not very familiar with the implications of digitalization for journalistic professions. A qualitative case study was conducted in order to understand how journalistic job descriptions and competencies change with digitalization and how these changes are experienced in terms of the quality of working life. The results suggest that changes in job descriptions can occur in different ways: by *transferring* tasks from one job description to another, by *fusing* two or more job descriptions or by *adding* new tasks to the traditional job descriptions. Changes in competencies were brought about by the digitalization of production technology, changes in job descriptions and the emergence of new media and new working practices. The job descriptions of journalists became more post-bureaucratic, whereas those of editors remained bureaucratic. Especially changes in competencies were experienced as stressful. The interviewees also experienced that the quality of the programs had decreased, at least during the early phases of digitalization.

Key Words: digitalization, radio, television, journalists, editors, new media

Introduction

Digitalization and media converge have elicited considerable discussion about the future of journalistic work and other professions in the media industry. The subject has been touched upon in various scientific arenas and in practical debates. However, there are few reports about the actual implications of digitalization for journalistic professions. Media research, both past and present, suggests that journalistic professions and routines are socially constructed systems, which help to deal with complex work processes by organizing work and explicating roles and responsibilities (Fishman, 1997; Tuchman, 1978). They can be renegotiated when changes occur in the work setting. They act, in part, unconsciously as values and norms of the work culture, to which members of the work community are socialized (Seelig, 2002). This implies that chang-

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ing journalistic professions requires not only changes in the formal organization of work, but also changes in the implicit guiding principles of work.

According to Huovila (1998, 228), work in large media companies has traditionally resembled functionally divided industrial work. Each stage of the program production process has been performed by specialists: journalists have produced the content, video and sound editors have been responsible for the technical quality of the program and programs have been broadcasted in the radio industry by sound editors and in the television industry by a group of several professions, including for example a director, an assistant director, a script girl, a sound editor, a video mixer, a video editor and cameramen. Now, due to digitalization, the work processes of the media industry have been changed. Using digital technology in content and program production has been considered easier and this, together with the hard financial situation media companies are faced with, has led to increased multi-professionalism and mixed job-descriptions, which means for example that in the future journalists in addition to their traditional tasks will record, film and edit their programs. The question about the situation of sound and video editors has also risen: will they begin to work as journalists in the future? On the other hand, digital production and multi-professionalism also require profound professional competencies. In the media industry this means that some professions will disappear and needs for new education will emerge (see, for example, Teinilä-Smid 2000, 24).

In the *Nordicom Review*, the impacts of digitalization have been approached from several perspectives, especially from the perspectives of “media consumers” and the use of new media products (e.g., Isotalus, Palosaari & Muukkonen, 2003; Tufte, 2003; Wartella, 2003), and the continuity/discontinuity of the institutional status of different media and media companies (e.g., Drotner, 2002; Skogerbo, 1998). On the other hand, the professional roles and practices of journalists have been examined from a historical perspective (Høyer & Lauk, 2003).

In the most recent issue of the *Nordicom Review*, Slotterøy Johnsen (no 1/2 2004) approached digitalization from a view point similar to that adopted in this study, that is, from the perspective of job descriptions, competencies and job satisfaction (in his case, the implementation of an Internet application and a video journalism system). He found that the technological implementation of especially video journalism was accompanied by the redefinition of jobs. A job description of video journalist was formed, which included tasks that had previously been performed by journalists, cameramen and video editors. Changes in job descriptions raised questions about the quality of outputs, for example, as well as the stressfulness of work, the amount of workload, pay, skills and the future of the jobs of cameramen and video editors. Similar findings have been reported by Seelig (2002) with regard to introducing photo imaging software for photo editors in a newspaper. The new technology helped the professionals perform their jobs efficiently because the technology was considered easy to use. It also allowed them to track the status of news photos and close out pages to release for print. However, some photo editors experienced a heavier workload, feelings of isolation and decreased job security due to the implementation. Helle (2000) studied the implementation of a computerized pagination system for a daily newspaper. She found that digitalization changed job descriptions, for example the job description of typographers was rendered obsolete. The technological change also altered spatial arrangements as layouters, for instance, moved to centralized layout desks. Some journalists trained to become multi-professionals, performing copy editing, layout planning and paginating tasks.

In this study, the implications of digitalization in radio and television program production are examined in terms of changes in job descriptions and competencies as well

as ways in which these changes are experienced. The aim of this paper is to describe the consequences and manifestations of digitalization in media industry workplaces.

A Qualitative Case Study

This study focused on examining the digitalization of radio and television program production and addressed three main research questions:

- How does the digitalization of production technology change job descriptions?
- How does the digitalization of production technology change competence requirements?
- How is digitalization experienced in terms of the quality of working life?

In this study, digitalization refers to three development trends, the transfer from analog to digital production, the emergence of new media and media convergence. Job descriptions are defined as sets of tasks and responsibilities that an employee is expected to carry out, including the cooperation that occurs across job descriptions. Competence requirements comprise skill demands that the employee needs to obtain in order to successfully perform the job description. The quality of working life is conceptualized as the employee's subjective psychological experience of all aspects of work, which is determined by the proportion and relevance of work-related stress and well-being.

In order to answer the research questions above, a qualitative case study was conducted. The data were gathered at the Finnish Broadcasting Company in 2001-2002, as the company was in transition from analog program production technology to digital production technology. The process of digitalizing radio and television program production began in Finland in the late 1990s. Digital radio broadcasts began in the Finnish Broadcasting Company in October 1998, and the first digital television channels were launched in August 2001.

In the study, changes in job descriptions and competencies and how they were experienced were examined using an open-ended qualitative theory-building research approach. Arguments have been made according to which pre-designed and structured instruments blind the researcher, leaving the most important phenomena overlooked or misrepresented (Miles & Huberman 1994, 35). In this study, it was expected that qualitative open-ended data gathering methods would allow us to study changes in work and employee experiences more successfully than would a quantitative method. It has also been suggested that technological change should be studied in different settings and work cultures, as it has inconsistent influences on work and the quality of working life, both positive and negative at the same time (King, 1986; Kraut, Dumais & Koch 1989). By choosing to use the case study method, similar processes of digitalization could be studied in various settings.

Data selection for this study included selecting cases, professions and interviewees. *Case selection* was performed by using three criteria: cases both from radio and television program production should be included; at least one case study should deal with topical program production and one with documentary program production; and the technological change had to be ongoing. Three cases were selected: a radio channel concentrating on documentary programs, a digital television news channel, and a television channel with a documentary focus that aired both analogically and digitally at the time of the study. The *professions* selected for the study had to be highly involved in program production and changed by digitalization. The main occupational groups stud-

ied were journalists, media journalists and editors. Four criteria were used in selecting *interviewees*: gender, age, occupational status and work experience. Women and men of different ages as well as permanent and temporary staff were selected for the interviews so that different views would be revealed. The interviewed employees had been working in the company for several years and had experience of both analog and digital production technology.

The case studies were carried out consecutively. Work processes of both radio and television program production were observed and expert interviews of managers were carried out in order to gain a better understanding of the work, changes in work and experienced changes in work. Observation data and expert interviews served as background material, whereas thematic interviews of 32 employees, mainly journalists and sound and video editors, constituted the main data of the study. The main data were collected using thematic interviews dealing with job descriptions, changes in job descriptions, competence requirements, changes in competence requirements as well as well-being and equality during digitalization.

The recorded interviews were transcribed into text and read through several times before the analysis. Data were analyzed using qualitative content analysis. The analysis was inductive, resembling a grounded-theory approach to analyzing interview data. Within-case analyses were conducted first, after which a cross-case analysis was performed. The analysis aimed at producing a rich understanding of the studied phenomena. Due to the qualitative nature of the study, it was not important *how many* interviewees expressed similar views, but *what qualitatively differing* views could be identified from the data.

Experiences related to the quality of working life were linked to four themes, but the experiences are reported in this paper only from the viewpoint of changes in job descriptions and competencies. More detailed accounts on changes in descriptions and competencies and the ways they were experienced are reported for example in Suolanan et al. (2002), Helminen et al. (2002, 2003) and Rintala (2005). In this paper, first results of changes in job descriptions are reported, followed by results of changes in competencies. The results are accompanied by some exemplary interview extracts, especially enlivening results related to the quality of working life.

Changes in Job Descriptions and How They Were Experienced

The first research question focused on the implication of digitalization for job descriptions. Based on the three case studies, it seemed that job descriptions changed in three ways:

- the transfer of tasks: tasks of some professional groups were transferred to the job description of others
- the fusion of job descriptions: job descriptions that were previously performed by two or more separate professional groups were fused into one
- the adding of tasks: new tasks mainly related to the emergence of new media were created and added to the existing job descriptions

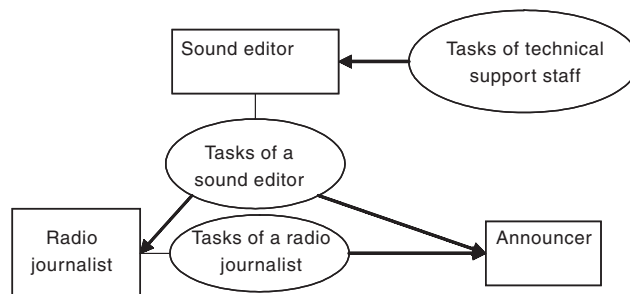
In the radio channel and in the television channel, the changes in job descriptions were predominately caused by the transfer of tasks, whereas in the television news channel, changes in job descriptions resulted from the fusion of job descriptions. Let us now examine the types of changes in job descriptions more closely.

(1) *The transfer of tasks* in the radio program production concerned mainly the transfer of sound editors' tasks to the job description of journalists. These tasks included those related to producing, recording and editing the sound for the audio programs. Tasks related to broadcasting were transferred from the job description of the sound editors to the announcers. In addition, some plans had been made according to which tasks related to producing jingles could be transferred from the journalists to the announcers. It was also seen as possible that the announcers' job description would be supplemented with technical support tasks. In the documentary television channel, some tasks of the cameramen and video editors had been transferred to the journalists and the interviewees believed this to be an increasing trend.

Due to the transfer of tasks, none of the professions had become totally obsolete in the radio and television program production, and the interviewees thought that sound editors, cameramen and video editors would be needed in the future as separate professional groups. There were two future visions about the job descriptions of sound editors: their job description will diminish and even become obsolete as editing tasks are transferred to journalists or they will focus on mastering more complex sound editing tasks and some complex broadcasting tasks. In the documentary television channel, it was believed that journalists would film only complimentary material and only seldom all the material of the program. Also the total fusion of all the tasks of video editors to the job description of journalists was considered impossible. The transfer of tasks enabled journalists to master the program production process more autonomously, but simultaneously narrowed the job descriptions of sound and video editors and cameramen.

Figure 1 illustrates the changes in job descriptions in the radio channel. The job descriptions changed mainly due to the transfer of tasks. Some new tasks were also linked to the job description of sound editors, as it was possible that they would begin to act as technical support specialists for the journalists.

Figure 1. *Changes in the Job Descriptions of Radio Journalists, Announcers and Sound Editors in the Radio Channel*



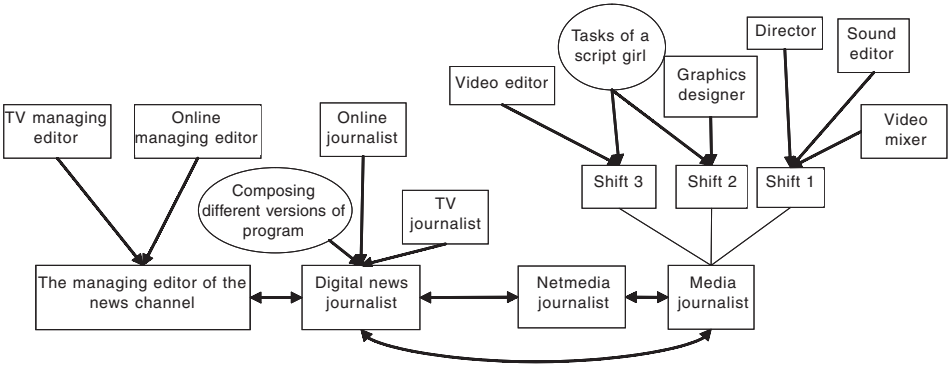
Note: The rectangles illustrate job descriptions and the ovals some separate tasks that are added to the job descriptions.

The job descriptions were changed also by (2) *the fusion of job descriptions*. This was the main trend according to which the job descriptions of the television news channel had changed. The changes in job descriptions had resulted from forming new job descriptions and giving up traditional job descriptions. In the television news channel, the job descriptions of traditional television journalists and online journalists producing Internet news were fused and formed the job descriptions of journalists. In practice, not all the journalists produced news for both the television and the Internet, but rather

worked for only one of the media. A job description of media journalists had also been created. This job description included traditional job descriptions of video editors, graphic designers and directors, and these professional groups no longer existed in the digital television news channel in their traditional form. Also the job description of the managing editor had been formed by fusing the traditional job descriptions of television managing editor and the online managing editor. The fusion of job descriptions implied that some job descriptions became obsolete or narrowed in the program production.

Figure 2 illustrates the changes in job descriptions in the television news channel. The changes in job descriptions resulted mainly from the fusion of traditional job descriptions, especially in the case of media journalists, who worked in three shifts: an editing shift, a graphic shift and a broadcasting shift. Some tasks were also added to the job descriptions, the job description of media journalists was supplemented with tasks of a script girl and the job description of digital news journalists was supplemented with tasks relating to versification (compiling different versions, pieces, of the same material for different media, e.g. television and the Internet).

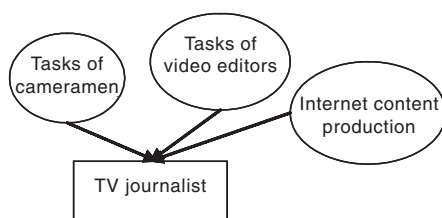
Figure 2. *Changes in the Job Descriptions of Managing Editors, Journalists and Media Journalists in the Television News Channel*



Thirdly, the job descriptions were also changed by (3) *the adding of new tasks* to the traditional job descriptions. These new tasks were especially related to the emergence of new digital tools, mainly the Internet but also digital mobile terminals. The changes brought on by the Internet were linked to the television cases, the documentary channel and the news channel. In both of these work units, tasks related to Internet content production and technical realization of Internet pieces had been added to some journalists' job descriptions. In the television news channel, some of the journalists worked as "netmedia" journalists choosing and adding illustrations to the Internet stories. New tasks were elicited also by new work methods that accompanied digitalization, such as the composing different versions of programs to different media. In the television news channel, different versions of television news were mainly composed to the Internet. Both television channels also composed the different versions of their programs for both analog and digital television channels with slightly different focuses.

Figure 3 shows how the journalistic job descriptions changed in the documentary television channel. On one hand, tasks were transferred from the job descriptions of cameramen and video editors to the job description of journalists, but also completely new tasks were added due to the need to produce material for the Internet.

Figure 3. *Changes in the Job Descriptions of Television Journalists in the Documentary Television Channel*



The third research question dealt with experiences related to digitalization. The journalists and editors *experienced the changes in job descriptions* in different ways. The narrowing job descriptions of editors were experienced as negative in terms of the quality of working life. The need for professional sound and video editors was altogether questioned in the organization, which induced stress and fear of job loss for the editors. One sound editor, 27 years, expressed:

In my opinion there have been misconceptions that these computers somehow would replace editors' professional skills. That is not true. There are quite a lot of these misconceptions. Now it is possible to edit in the offices, that is really the change, but it is not so, the computer has no professional skills whatsoever, it is just a stupid machine, which does what it is told. It is not good that people somewhere think the computer can replace some of the professionalism of sound editors. It does not do it, it is a misconception.

In the television news channel, the job descriptions of the employees who had previously worked as editors had actually enriched as tasks of graphic artists and directors had been added to their job description. These media journalists had also been allocated some content-production tasks such as searching for video material for the program. In the radio channel, the sound editors had not been trained as journalists, but had not lost their job positions either.

Along with introducing new digital production technology, the job descriptions of journalists, announcers and media journalists became more independent and autonomous, which was experienced as positive in terms the quality of working life. One radio journalist, 37 years, said:

When I worked with c-tapes I had to make a tape chart and go to the studio and work with a sound editor. The change, which is solely positive, is that I get to do the entire program by myself from the beginning to the end and I have a sound editor for the work, which I think takes time unnecessarily and excessively from my other tasks, such as this finishing. But all the editing, which I can do in my office, I feel it's a plus, positive without a doubt.

One television journalist, 54 years, experienced digitalization as highly positive:

This digital editing is a fantastic revolution as you can change the order [or video clips]. It is unbelievable how we have done things [before] and it is a pity that these youngsters today, who can directly use digital technology, cannot understand how much effort we have had to put into making the programs. It is fantastic because it is possible to transfer and set and take and bring video clips... it is fantastic, I don't know how any journalist can oppose learning to use it.

There again, work was seen as having become lonelier, as traditional cooperation diminished. This was experienced to induce stress and influence the quality of working life in a negative way, as the level of profound social contacts and feedback decreased even though the amount of contacts, according to some interviewees, increased. In the television news channel, work was not perceived as having become lonelier. This might be due to the type of program production (as news production requires intensive information sharing and cooperation), the type of the workspace (as the personnel worked physically close to each other in an open-plan office), the minor changes in job descriptions (as entirely new job descriptions were created and task transfers from one job description to another were minimal) and the average age of the interviewees (the average age was seven years lower than in other case studies).

Interestingly, some interviewed journalists mentioned that with the process of job redesign their work had become more independent as well as more fragmented as a result of composing different versions of the programs, producing material for different channels, using several formats and communicating with technological advisors. One television journalist, 41 years, for example, expressed the following:

Previously, especially years ago, you could concentrate on doing your own piece but now, even doing a piece, in my opinion in the past couple of years, is accompanied by a huge amount of excessive things. You have to take image files for the Internet piece to the graphic artist and then give headings to the editorial secretary and then take the material to an Internet journalist. And you have to be in interaction with very different sources and there is always a feeling of forgetting something. I think that earlier being a television journalist used to be more about doing your own piece and that's that.

The fragmentation led to a somewhat increased amount of social contacts, but the quality of these contacts was not sufficient to replace the previous cooperation with editors.

Moreover, enriched journalistic job descriptions were seen as interesting but also excessively stressful, as the learning of new tasks was experienced as difficult and enriched job descriptions were experienced as negatively linked both to the pace of work and to maintaining a high level of quality of programs.

The changes in job descriptions were in all the cases seen as a partly beneficial development trend, but they were also opposed on several accounts. Working along the traditional job descriptions was preferred due to personal dispositions. Some interviewees expressed that they had applied for a certain profession in the organization and that new tasks or a new job description may not interest the interviewee or match his/her personality. It was also seen that the employees lacked professional competencies in the new tasks. This was partly connected to the early stage of digitalization and the moderate level of training that the interviewees had received, but also to some beliefs that it is impossible to master tasks of several traditional job descriptions without a decreased level of quality of outputs. Lack of time was one reason for opposing changes in job descriptions. Especially some radio journalists experienced that in the current production schedule it is not possible for journalists to be responsible for the technical realization (sound editing and possibly also broadcasting) of the audio programs. The traditional job descriptions were backed up also by referring to work practices in the work units. Especially in the television channels multi-professionalism had not been applied to its fullest potential, but some journalists still worked only for certain media or performed only certain tasks. Composing different versions of the programs and producing material for the Internet had not either proceeded as planned, as the journalists seldom carried out these tasks. The updating of Internet material was still left to be done

by other, more technically professional groups. Moreover, some radio journalists experienced that the sound editing software, which was used at the studied time, needed to be developed more before they would be interested in learning how to use it.

One television news journalist, 36 years, opposed extensive journalistic job descriptions due to reasons connected to competence requirements and the quality of programs:

Illusions of the synergetic advances are overestimated and it will soon be discovered that television program production has certain processes that one worker has to do and they do not speed up but rather slow down if an unskilled person is assigned to perform tasks that another person is capable of doing...the commitment towards work may increase somehow and the work may be experienced as more of one's own if one participates in doing all the work phases, but as all of these work phases are quite complex and difficult, the end result will not be the same.

Overall, some interviewees highlighted that the changes in job descriptions were enabled by digitalization, but were also elicited by productivity-enhancement goals. Others held a view that the only driving forces behind digitalization were, in fact, financial. They believed that similar changes in job descriptions could have occurred in analog program production as well.

Changes in Competence Requirements and How They Were Experienced

The cross-case comparison of all three cases revealed that the changes in competencies resulted mainly from three driving forces:

- the changing program production technology
- the changes in job descriptions
- the emergence of new media and composing different versions of the programs

Also the tightened financial situation had somewhat changed competence requirements. Changes in competencies had also been caused by the above-mentioned factors taken together and the classification of the factors is not unambiguous. For example, the journalists' competence requirements related to sound editing and filming were brought about both by the changes in job descriptions and by the changes in technology: technology that is more inexpensive and effortless to use enables the fusion of traditional job descriptions, but does not automatically lead to it. Similarly, when journalists had learned to produce pieces for the Internet, changes in competencies had been caused both by the emergence of new media and by the changes in job descriptions, as the emergence of Internet as a medium does not automatically lead to it becoming a part of journalists' job description.

Some competence requirements became unnecessary and some new competence requirements were created by (1) *the changing program production technology*. Due to changes in technology, some competencies had become obsolete. However, surprisingly few competencies actually became out-dated. Obsolete competencies were mainly mentioned in the radio channel and were mainly related to the transfer from analog sound editing with reel-to-reel tapes to digital sound editing with computer software. After sound editing had turned digital, the sound editors and journalists did not handle reel-to-reel tapes anymore, which made the related competencies unnecessary. Also in the interviews of the television news channel, it was expressed that sound and video edit-

ing software develop constantly and due to the implementation of new software, competencies connected to using the old software “expire” at least in part.

The changing program production technology also brought about new competence requirements. New competence requirements were related to producing audio and video material, as in radio program production tape recorders and in television program production cameras had turned digital and both journalists, sound editors and cameramen had begun to use the new equipment. The new digital picture format 16:9 had changed competencies related to filming as the image composition had to be formed differently with the new technology. After the material had been produced, it was digitally transferred to the cutting studios or to the broadcasting studios instead of delivering the analog tapes in person. Journalists, editors and cameramen had to know how to use the intranet in order to transfer the material. Competencies related to editing the program changed considerably due to the digitalization of production technology. Journalists, sound editors and media journalists had to learn how to master digital, nonlinear editing. Even journalists, who did not yet edit their material digitally, had to understand the principles of nonlinear editing in order to be able to discuss the program with the sound editors and media journalists. Also competencies related to broadcasting changed as broadcasting studios were digitalized. In radio program production the competence requirements of sound editors and announcers were increased as they had to begin digital broadcasts. In addition, the sound editors had to know how to operate the new digital sound editing tables. In the television news channel the broadcasting was semi-automatic with the broadcaster (media journalist in the broadcasting shift) controlling the broadcasting and driving pre-loaded files in the correct order.

Secondly, new competence requirements were brought about by (2) *changes in job descriptions*. The competence requirements of announcers increased as they took responsibility for broadcasting audio programs and had to control the level of audio broadcasts and master the broadcasting equipment. In addition, new competence requirements were expected to be added to the job description of announcers, as it was planned that they would produce commercials for the audio programs. Also the competence requirements of journalists had changed in the radio program production, as they became partly responsible for sound editing and had to understand the nonlinear basis for digital editing. In the documentary television program production, the journalists’ job description had been enriched with filming and editing tasks and related competence requirements, such as using digital cameras, knowing how to log the material, as well as inserting subtitles into the news. The increased independence of journalists’ tasks implied that journalists had to be able to solve work-related problems more autonomously.

The competence requirements also resulted from (3) *the emergence of new media* and composing different versions of the programs. New media basically referred to the Internet and the new digital television channels. The new media changed the competence requirements by changing the know-how related to the different media. This meant that journalists, media journalists and producers had to consciously think about the properties of different media from the audience point of view. For example, in the Internet, shorter sentences had to be used than in television and illustration had to be simpler. Especially the competence requirements of producers changed, as they had to decide of what programs to compose an Internet version and how to link the pieces on the Internet to the television programs. In addition to producers, also journalists and media journalists had to somewhat master the technical properties of the Internet to be able to produce an Internet piece or to understand the technical possibilities and restraints of the medium. Due to the implementation of new media, different versions of programs had also been composed to some degree from one medium to another, which also brought

about competence requirements. The journalists and producers had to be able to come up with two kinds of outcomes, two programs, which may have had different narrative constitutions due to the different properties of the media or the different lengths of the programs. Competencies were also required in understanding from which subjects it was even possible to produce two different programs and in being able to produce different kinds of programs, e.g. documentaries, short stories and films. When composing multiple versions of programs for different media and working simultaneously with several programs, the social competence requirements and requirements for flexibility were increased for the journalists.

The interviewees *experienced the changes in competence requirements* as both positive and negative in terms of the quality of working life. The digitalization of production technology offered new learning experiences and increased motivation at work. One radio journalist, 60 years, described learning in digitalization:

When I had to learn it, I did. And after that I could not give up the computer. This is just an example of new things emerging. We learn how to drive on the left-hand side and it does not take long. And other thing as well, we get new equipment and we learn. Sure we do as these machines are made by human beings for human beings – or I am not sure if engineers are human beings... (laughs). It is interesting in work that you don't always have to do the same thing, twist the same nut.

However, learning to use new technology was also related to experiences of stress. Employees who were experienced in using analog technology and work methods but lacked experience in using digital technology experienced the technological change as difficult. Moreover, learning and the limitations of meeting new competence requirements induced stress experiences such as insecurity and fear. One television news journalist, 47 years, said:

The fear I had and still have in the back of my head is that I don't manage the work properly and I try to ensure that there is someone near me, who I can ask, because otherwise you are quite alone with the computer. It was not nice when I started to do these, I almost had a stomach ache half a week before the broadcasting as I knew I had to go to the broadcasting studio and it was because of lack of training. If I would have had the opportunity to rehearse properly and in peace, of course there would be less anxiety.

Another television news journalist, 24 years, told the interviewers:

I just don't, I just cannot even take on the enormous amount of information any more. I do not want to learn every little detail, I just cannot do it. The whole time there are changes and something new comes and it is really hard, at least for me.

Experiences of formal training were both positive, praising the individual, accessible and gradual nature of training, and negative, criticizing factors related to the training situation, e.g. technological malfunctions during the training session, and to the insufficiency of training. Simultaneous training for the whole work group or team was seen as important, but it could not be carried out due to the intense work pace. Overall, the workload and work pace hindered participating in training as well as rehearsing new competencies. Interviewees described that changes in competence requirements had changed the structure of the work units in the television channels: some employees who were previously considered as experts lost some of their status as new technically more

experienced employees had to be recruited. These changes had caused tension and anxiety in the two work units. In the radio channel, which was a well-established work unit and did not undergo changes in personnel during digitalization, conflicting situations were not reported in the interviews.

Learning new competencies also occurred informally. Informal teaching and learning occurred between individuals within and across professional and age groups. In the case of the television news channel, training methods resembled informal teaching and learning as co-workers trained the new recruits. Even though the training was carried out in the work context, the employees still felt the need for more time to rehearse new competencies. The training was considered to be individual but problematic as there were too few opportunities to rehearse new competencies in a quiet and peaceful off-the-job learning environment, in which making mistakes was allowed. Peer training as a training method also induced stress. One television journalist, 35 years, expressed:

There are always employees who cannot do something and they can't learn it, and the rest, who can manage it somehow, have to try to cope as well as help and train those, who still have no skills at all. I think that is one of the reasons why people are so tired.

Learning was seen as continuous and as an integral part of the work. The ongoing nature of learning was seen as a motivator contributing to well-being, but also as a stressor. In a situation, in which the development of technology and the implementation of technological changes induced constant changes in work, informal training was seen as a way to ensure a high level of competency and a feeling of professional confidence. Some interviewees considered informal learning to be better than formal training, at least in minor changes in work.

Conclusions and Implications

Before digitalization, the job descriptions of radio and television program production resembled *the bureaucratic model of work*, in which, according to for example Heckscher (1994), each job description is clearly and explicitly specified and the work process is fragmented into relatively autonomous components managed by different professionals. The bureaucratic form of work has dominated work organization since the 1950's. This form of organizing work can be defined with the core features of bureaucracy: hierarchy, specialization and workflow formalization. In the traditional bureaucratic organization, the hierarchy of occupational titles makes manifest differences in power and authority (Hirschhorn & Gilmore, 1992). The work is highly specialized: split into tasks performed by employees of specific skills and training. Independent functional departments coordinate pools of specialized expertise (Hirschhorn & Gilmore, 1992). Especially, the traditional bureaucratic form of work can be characterized by formalization, that is, the extent of written rules, procedures and instructions (Adler & Borys, 1996).

In the three studied work units, job descriptions and competence requirements were changed along with the process of introducing new technology – a development trend that is noticed widely in the contemporary work life (Martinsons & Cheung, 2001). The changes in job descriptions were relatively radical, altering the traditional functional division of work tasks. The changes in job descriptions were different for different professional groups. The job descriptions of journalists, announcers and media journalists were enriched and these professionals carried out the work process more comprehen-

sively and autonomously. As they began to perform also editing, recording and broadcasting tasks within the work process, they were able to make decisions about their work methods and schedules more independently. The job descriptions of these professions began to resemble *the post-bureaucratic model of work* (Heckscher, 1994), in which workers are more independently self-managing their tasks (Carlson, 1999; Giuliano, 1991). Instead of focusing on adherence to regulations and job descriptions, employees in post-bureaucratic organizations are empowered to achieve work goals within the guiding principles and values of the organization. The post-bureaucratic organization sees the bureaucratic specialization and routinization of jobs as unnecessary and even counter-productive (Baytos & Kleiner, 1995). Separate and explicit job descriptions are replaced by fluid, ambiguous and deliberately ill-defined tasks and roles (Dess et al., 1995). The work force is multi-professional and flexible, thus able to switch over to new tasks as the environmental conditions of work change. However, work in the studied cases did not become entirely post-bureaucratic – even the existence of explicit job descriptions can be seen as bureaucratic.

The job descriptions of sound and video editors narrowed and the job descriptions of these professions remained similar to the bureaucratic model of work, as the work consisted of only one limited phase of work.

As job descriptions became more varied and employees began to train themselves to become multi-professionals, the qualitative flexibility (Schabracq & Cooper, 2000) of employees increased but *the demands for information processing and concentration* increased in a stressful way. Employees, who were experienced in using analog technology and work methods but lacked experience in using digital technology, experienced the technological change as difficult. This might be due to some competencies becoming obsolete (Chang Boon Lee, 2002) and to the emergence of new competence requirements. These kinds of changes in competence requirements can degrade the overall feeling of competency an employee has, which gives protection against stress, according to Toppinen and Kalimo (1997). Moreover, learning and the limitations of meeting new competence requirements induced stress experiences such as insecurity and fear. These feelings can be connected to the lack of confidence of learners in using technology, as suggested by Lewis (1999).

The results of this study suggest that the changes in job descriptions can occur in different ways: by transferring tasks from one job description to another, by fusing two or more job descriptions or by adding new tasks to the traditional job descriptions. These changes and the changes in competence requirements should be *gradual*, allowing the employee to proceed at his/her desired pace. For example, new tasks should be added progressively so that the employee can better manage new demands and responsibilities. Changes in job descriptions should be *moderate*, not reducing the meaningfulness of the work, which might be the case for the editors, and not extending the job description excessively with new tasks or enriching it excessively in terms of demands and responsibilities, which may threaten the quality of working life for journalists.

According to this study, digitalization should be introduced with consideration to the work motivation and abilities of individual employees. The study showed that each *individual experiences* digitalization and the changes it brings about in work in different ways, which are at most loosely linked to their demographics, such as gender and age. Due to the individual ways in which digitalization is experienced, sufficient organizational support – opportunities for training and rehearsing, personnel resources and appropriate scheduling of work – should be ensured.

What about *the quality and efficiency* of the digital program production? The interviewees experienced that the multi-professional journalistic job descriptions were nega-

tively linked to the quality of programs. There again, some interviewees were ready to accept that the criteria for quality have changed for good. Even though there were visions of work becoming more productive, the work pace did not speed up, at least not in the early days of digital program production. Based on the interviews, for journalists, technical tasks and competence requirements were increasing in amount and importance compared to content production tasks. There again, the job descriptions of sound and video editors became either more mechanic or increased in terms of technical performance and content production. However, due to media convergence, it may become increasingly difficult to draw the line between content production and technical performance in journalistic professions.

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