Chapter 15

The Cinderella Story – Employees Reaching for New Agency in the Digital Era

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Abstract

The chapter analyses how backstage service employees may rise from invisibility to active agency when they are at risk of loosing their jobs during the digitalization of services. We conducted an intervention process aimed at envisioning future digital services and new work. The analysis is based on employee interviews regarding their future work horizons, interviews of management and HRD, and two workshops organized to support the co-creation of future service and work. The approach derives from the literature on human agency. Invisible back-stage service workers may face a similar developmental pattern to that of "Cinderella" when finding their way in the digital era. The interviews of the managers and HRD indicate how difficult it is to foresee and develop the future competencies of employees, before deciding upon the path on how to organize the service between human beings and technology. The study contributes to the understanding of backstage service employee's perspectives and makes visible their attempts to have an agency in technological transition, which previous studies have rarely analysed in depth.

Keywords: agency, digital service, automation, transformation, implementation, backstage, employee, health care

1 Introduction

"In the fairy-tale of Cinderella, a girl is exploited as a servant by her family but enabled by a fairy godmother to attend a royal ball. She meets and captivates Prince Charming but has to flee at midnight, leaving the prince to identify her by the glass slipper that she leaves behind."

Digitalization embraces almost every aspect of contemporary work and ranges from local care services to highly specialized cloud services. Thus, the contents and arrangements of work also change in concert with digital development. New types of business start-ups, entrepreneurship and flexible forms of work have moved towards each other. The insecurities in societal and economic developments have given rise to new forms of employment, with a need for increased flexibility on the part of both employers and employees. The characterization and

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theoretization of the forms of new work and new employment are still very much in progress. (e.g. Frey and Osborne 2013; Brynjolfsson and McAfee 2014).

The occupation-based approach of Frey and Osborne (2013) estimates that as much as 47% of all people employed in the US will be replaced by computers and algorithms within the next 10 to 20 years. However, this estimation has been criticized for using occupations as a unit of classification, and for overestimating the development speed of implementing new technologies. A job's task-based approach has been proposed as being more realistic. Automation usually aims to automate certain tasks rather than whole occupations, and bundles of tasks that cannot be easily automated always exist. A task-based approach to automatibility in the 21 OECD countries estimates that only 9% of jobs are potentially automatable (Arntz et al. 2016). Our study contributes to the current debate on this subject by focusing on the task-based impacts of new technology. Both approaches mentioned above point out that the risk of job automation exists mainly among low educated workers, and identify a need for upskilling and training these people. However, they neglect to analyse the potential attempts, agency or motivation of these workers to either create new jobs or move on in their careers, which we discuss in the chapter.

The current process of transition into the digital era is radically changing the service context in our societies. For clients, services become ubiquitous, constantly available, smart, and globally reachable. This new service context is not only changing client experience; it also has a profound influence on how frontline and backstage work is organized (Ostrom et al. 2015). Research on the digitalization of services has mainly been concerned with increased productivity and the changing role of the customer (Brynjolffson and Hitt 2000, Breit and Salomon 2015). Analyses of the changes in the content of service work in the digitalized environment have so far been scarce. However, the exploratory study of Åkesson and Edvardsson (2008) has identified a demand for expanding expertise and new professional roles among employees to make them actors in complex IT-enabled service systems.

The introduction of new technology can have significant effects on the work lives and careers of employees, not only by replacing manual, face-to-face service work, but also by offering them new developmental horizons (Stam, et al. 2006). Our research questions are: 1) What kinds of change horizons the service workers identify in their work in a moment before its automatization? 2) How do they voice their own job roles and skills in the future work in an arena including both employees and managers? 3) How does the managers and human resource managers foresee who should be responsible of developing employees' skills for the future? Should organizations support employees agency and help them develop their skills for the future work, as in the fairy-tale of Cinderella the fairy godmother intervenes in routinized everyday life before the royal ball?

This study highlights the workplace- and task-level consequences and opportunities of digitalization in an internal support service unit of a Finnish health care organization. The case study is focused to a word processing service, in other words typists' jobs, in a moment before the majority of their work tasks may be automated. The chapter contributes to the employee-driven and human-centred perspective (e.g. Høyrup & al. 2012) in the digitalizing care service context. The chapter is structured as follows. Following this introduction, the previous research and agency as a guiding concept for the study are presented. The empirical context and methods are then described, and this is followed by the findings according to the three research questions. The chapter concludes with a summary of main findings, a discussion of their practical implications, and presents the limitations and possible future research avenues.

2 Agency of employees in transition

In the complex, digitalized service environment, the frontline employee's role, which represents dyadic client-employee interactions, is in transition. As IT-enabled innovations turn clients into operators of their own services, the diminishing role of employees is reinforced (Rust and Huang 2014). For the individual worker, building a new work role and crafting a new job

in the rapidly changing labour market is not an easy task. In this paper we use agency as a theoretical concept to explore the emergent motivational state of employees, in their intentions and attempts to 'scout' for new competence, responsibility and role/relations at work. Agency can be seen as human potential to establish and pursue different projects in life (Archer 2000). It includes forming interests in society, as well as having the resources and capabilities to pursue goals through interaction with other people (Archer 2003). The relational view of agency emphasizes the interconnected nature of peoples' lives; people need each other's support and resources when navigating the social world, and the relations between them influence their choices and possibilities (e.g., Donati and Archer 2015). Changes in agency can be traced in (transformational) speech, discussions and interactive (work) situations, as employees discursively and habitually use and perform previously unused voices or actions (e.g. Halford and Leonard 2005).

However, as the face-to-face servant role of service employees may seemingly fade away when the technological interface pushes them into back offices, these employees may be given the opportunity and space to form new agencies and adopt new roles and relations. They may become innovators of new services based on their deep experience with clients; enablers, helping and training clients to use technology; differentiators, giving a genuinely empathetic and personal face to the surface of the service, or co-ordinators, handling integration and building bridges between different offerings (Bowen 2016).

In at least the implementation phase of e-services, service workers' agency may depend on how quickly and smoothly customers are willing to adopt the role of co-producer of the service, and be guided to increase the use of self-service with the IT system (Breit and Salomon 2015, Berger et al. 2016). Previous studies of e-government have perceived increases in staff workload because the staff must simultaneously assist citizens in digital communication and guarantee face-to-face service to the most vulnerable citizens who have neither the competence nor possibility to use digital services (Berger et al. 2016)

Employee-driven perspectives on innovation have recently been widely discussed (e.g. Høyrup et al. 2012). However, research and intervention efforts have scarcely focused on how, in practice, frontline employees may become service innovators or designers of their own work (Hasu et al. 2011; Saari et al. 2015). Workplace-level intervention methods and tools to enhance employee innovation, and especially the process and outcome assessment of interventions, have scarcely been reported (Nielsen 2013; also Watanabe et al. 2015). Case studies so far indicate that empowering and allowing employees to apply their customer know-how and ideas to service innovation increases preconditions for development, improves services, and positively influences their well-being (Hasu et al. 2014; Honkaniemi et al. 2015).

Only a few studies have captured workers' positions, experiences and subjectivities anchored in place, space and time (Halford and Leonard 2005) in the implementation process of a new technology. One sensitive, ethnographic analysis of a nurse and a doctor who implemented the use of the neuromagnetometer (MEG) in the clinical activities of a hospital laboratory un-covers the story of an employee who was both an insider and an outsider, struggling with the unfinished software, and working as an invisible actor for the developers (Hasu 2005; Star 1991). In the ethnographic interviews, Doctor Sara indicated she was a step ahead of the technology developers in concretizing the emerging measurement service for patients. How-ever, several continuous problems in the use of the software programme, and not being taken seriously, finally made her resign from the task (Hasu 2000). This shows how unofficial and fragile the agency of the employee might be during the technological implementation process. Social service professionals' resistance to mobile reporting has been seen as contradicting their primary motivation, which is to help their clients. If the new technology takes too much time away from interaction with clients, and if it is experienced as disturbing the ability to op-erate autonomously, employees tend to resist it (Stam et al. 2006). Unfortunately, IT-systems and mobile applications designed to employees appear to be more cumbersome inside or-ganizations, than they appear to the clients.

Mobile technology has been considered a means to control and make employees objects of managers' surveillance in, for example, home care work (Vuokko 2008). This contains the risk of losing the autonomy of individual work situations, and may seriously jeopardize employee motivation, particularly if reporting to managers by using unfinished technology takes more time than time spent in the customer encounters.

Previous research on the implementation of e-services in the public sector has identified several points which will change work and the relationship between employees and customers. These concern service encounters, customers as co-creators, efficiency, and increased complexity and integration of services (Åkesson and Edvardsson 2008). Being available 24/7 through e-facilities increases the pressure on employees, because customers constantly demand solutions to their problems via numerous channels. Although face-to-face meetings may decrease, employees may still lack time to help customers who either cannot or do not want to use e-services. As customers become co-creators or conductors of self-services, they gain more responsibility for how they use the services, how much they comprehend and take advantage of them. Efficiency depends not only on the IT skills of customers, but also on the willingness and interest of individual employees to learn to use them. Sometimes employees are not informed early enough about IT updates or changes in service regulations, and customers may demand them even if the employees do not yet know how to provide them. The flow of information across authorities has become easier because of IT systems and through single e-identification of customer. However, the rules of collaboration between organizations may lag behind. (Åkesson and Edvardsson 2008.)

These studies raise important questions as to why the implementation of a new technology is such a subtle process, and emphasize that the employee's gency is much more complex than anticipated by the management and IT service providers. They also show a clear need to analyse how not only frontline employees but also backstage workers could be more involved in anticipating and designing their new work when part of their work is being digitalized.

3 Medical documentation service as a case

Our case context is the largest specialized medical care organization in Finland; more specifically, one of its sub-units, which is responsible for various internal support services for hospitals operating under the organization. The particular service unit in question provides word processing services for the entire hospital district (five hospitals) and employs 300 typists who type approximately two million medical texts per year, dictated by almost 3000 medical doctors and other clinical personnel. The word processing of medical texts is an integral part of medical records and documentation in specialized care.

A new medical documentation service for doctors who perform medical dictation as part of their patient work was about to be implemented, when we entered the case organization. During 2016, after the manual dictation process, which used several hundreds of specialized typists located in hospital clinics (decentralized process), was replaced by a more digitalized and integrated process (centralized 'typing factory'), which also includes the opportunity to work from home, the number of typists decreased considerably. Currently, the digitalization of medical documentation is intensifying in the organization, through the adoption of speech recognition technology (Rabiner and Juang 2008), which aims to make doctors the users of the system and will eventually reduce typist work, and consequently the number of typists, to a minimum.

In the health care sector, speech recognition can be technically implemented at either the front-end or back-end of the medical documentation process. Front-end speech recognition is when the provider (doctor) dictates into a speech recognition engine, the recognized words are displayed as they are spoken, and the dictator (doctor) is responsible for editing and signing off on the document. Back-end or deferred speech recognition is when the provider (doctor) dictates into a digital dictation system, the voice is routed through a speech recognition machine, and the recognized draft document is routed along with the original voice file to the

editor (typist/doctor), who edits the draft and finalizes the report. Deferred speech recognition is currently widely used in the industry.

At the time of our study, neither typists nor medical personnel were familiar with speech recognition technology. Of the 18 doctors interviewed in a case study, only one had used speech recognition during a test project in 2014. Attitudes towards the system among doctors were heterogeneous, partly negative but partly also positive. The image of front-end speech recognition dominated. Doctors did not know the different ways to apply the automated system. Positive future expectations included increased time saving, improved patient care and documentation quality. From the viewpoint of medical work and documentation, the most important future benefits that the doctors anticipated were wireless/mobile work, multi-location work/work without a standard office, fast operations, full digitalization (no paper documents), just-in-time work, patient-centeredness, and simplicity. However, what seemed to be unclear to all stakeholders was the question of how to differentiate and categorize different user groups, and how many types of process variations should be offered.[1]

4 Methods and analysis

Ethnographic and intervention approaches were chosen as the methodology to help understand in a fine-tuned and sensitive way the perspectives of both employees and managers during a period when a challenging change was about to take place in a service process (Hammersley and Atkinson 1983; Hasu 2005). The challenge of the sensitive ethnography of change in the methodological sense, is to be able to trace something that has no clear material or social patterns yet, it is something which is about to emerge (Hasu 2005). The study was conducted in 2015–2018, as part of research project called: The revolution of service

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[1] The case study on medical doctors' interviews was part of our research collaboration with a third party (Kaufmann Agency), initiated by the researchers. The interviews included sample of medical doctors from different medical departments of the hospital, the future users of the speech recognition system.

economy - Human being at the core of digitalization, funded by Business Finland and the participating organizations. It enabled us to conduct several interviews of multiple actors, follow the change actions and aspirations in the organization, and carry out an intervention process that was designed to support the learning of the participants. The intervention method aimed at learning in the value-networks will be reported in detail in another paper (Saari and Hasu 2015). Here we focus on one particular element; what the grassroots-level employees gained from the facilitated workshop discussions.

First, by interviewing the typists themselves we analysed how their transformative agency is emerging. The data consisted of four individual typist's interviews and two group interviews, in which five typists participated. All of these interviews, in which all together nine typists were involved, took place before the intervention (workshops) in their own workplace environment, and their purpose was to explore how the typists saw their current work and its future. All the interviews were audio-recorded and transcribed. The interviewers also wrote an interview memo, and added their immediate reflections on it. In the interviews, the typists were asked to predict the future horizons for manual transcription work from the employee's perspective, when automatic voice recognition was about to replace routine manual work.

We identified the alternative horizons of the typists through content analysis of the entire interview data. The special focus of the analysis was on what motivates the interviewees in their work, and how they foresee their future work. Interviews were also used for informing employees of the design of the intervention workshops, in which they, managers and other involved stakeholders would together construct a vision of future services and work.

Secondly, the researchers organized a human-centered co-evaluation process consisting of four consequent workshops. They were not part of organization's routine human resource development activity, but could be defined as experimental research interventions. We voice-recorded all the groupwork discussions of each workshop and for this chapter we chose data from the first two workshops. Their tasks were to 1) construct a shared vision of the future,

and 2) create an inspiring story of one's future work and expertise when the service had been digitized. Six typists (who were previously interviewed), and three supervisors from the support service unit participated in the group discussions of the two workshops. In the first workshop, employees and managers worked in the same group and in the second workshop they worked in separate groups. Each group was supported by a researcher (second author), a facilitator between different groups (the first author) and a person (one or two) from the steering group of the project, who was called metaphorically as a godmother of a godfather.

We analysed the workshop discussions in which the typists were asked to create an inspiring story of their future work, when their current service had become to a large extent digitized. We analysed the discussions of two voice-recorded and partly video-recorded workshops. Group discussions and presentations of the workshops were transcribed, and samples of them were chosen after being read through several times in order to identify employees' speech turns. We analysed the two workshops as an ethnographic narrative, which resembled, in a metaphorical sense, the developmental pattern of the Cinderella story. The narrative interprets the significant intervening roles and the consequences of the employees' discoursive actions and speech turns during the workshops. We present excerpts from the presentations of the group work as samples of output from the intervention.

Thirdly, we analysed the perspectives of the management. We interviewed four management representatives and two HR professionals from the organization, on how they foresaw the need for preparing the staff for technological changes in the word processing services. All these interviews were also audio-recorded, transcribed and an interview memo with reflections was written.

5 Findings

In the following four sections, we present the empirical findings in detail according to the research questions. The subsections illuminate employees' agency in three complementary ways (Donati and Archer 2015): 1) as it manifested in the individual and group interviews as an individual orientation to the future, and 2) as it manifested as a relational phenomena in two workshops, in which employees and supervisors were together pondering the future of the service and typists' work, and furthermore 3) how the HRD and managers were prepared to empower employees' agency for creating new competence in a moment before the typists' work tasks were at stake to be automated.

Subsection 5.1 examines what kinds of change horizons the service workers identify in their work in a moment before its automatization. The results of the analysis indicate the hidden potential and agency of the backstage workers. They are motivated to design alternative futures for their work, if they are allowed to be involved in designing them. We identified four different developmental horizons from the interviews indicating agency of typists themselves. Subsections 5.2 and 5.3 examine how the employees voice their own job roles and skills in the future work in an arena including both employees and managers. The workshop discussions and their consequences indicated that if the typists were given subtle support, they could rise from a humble workers' role into designers of their own jobs. Finally, subsection 5.4 reports how the managers and human resource managers foresee who should be responsible of developing employees' skills for the future. The perspectives of the managers and HRD opened up the complexity and systemic nature of the change, and the way in which this hinders the preparation for developing new skills on the employee level.

5.1 Employees' change horizons

The analysis (in Table 1) outlines four different developmental horizons interpreted from the employees' conceptions. These are: 1) quality control editor, 2) ICT bridge-builder, 3) clinically

oriented worker, and 4) efficient homeworker. These developmental scenarios are not mutually exclusive and may even be realized simultaneously, depending on how the digitalization of the service proceeds.

Quality control editor and ICT bridge-builder appear to be clear, obvious job horizons, if speech recognition technology replaces mechanical typing work. Becoming a clinically oriented worker and finding a new role in the care value chain would probably require exploration of the clinical work processes at hospitals, and expertise in health care. The efficient homeworker represents the current organization of the typists' work, in which digitalization has enabled working from home. This may also be the future, if the typists become editors. It should be noted that we are not speculating on how many jobs may disappear after speech recognition technology is implemented. These job horizons were defined by the typists themselves, reflecting their own agency (see Archer 2000). As a whole, it is interesting how the employees themselves could foresee their own future work horizons, when most of the job tasks were at stake to be automated. It is worth noting that those typists who were working at the office and were more involved in the development of word processing services, could define their future work tasks as part of the organization more easily than those who were teleworking from their homes. Our another study among typists who worked full-time at home revealed that motives for taking care of future career within the organization were less central. Balancing work with the family life and individual entrepreneurial activities or hobbies were found important in their future horizons (Hasu & al. 2018).

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5.2   Towards a shared vision

The aim of the first workshop in January 2016 was to construct a shared vision for the future service process. For inspiration, the researchers provided the group with the beginning of a sentence, and asked them to continue, for example: In 2025, when you dictate your patient information as a medical doctor ….

The researchers also provided four scenarios of the future typist's work, constructed from the interviews to be further worked on.

In the first workshop, the group was heterogeneous. Six typists, three supervisors and three persons from other involved organizations, from the steering group of the research project (called godmothers or godfathers), supported the discussions, with two researchers either facilitating or observing. It is worth noting that it is not very common for basic-level workers such as typists to be invited to take part in organization or innovation development projects as participants in workshops. The group was obviously too big to include all the participants in the discussion. The discussion began by considering whose point of view they should focus on. Two young male typists; called John and Hans (pseudonyms) began to lead the discussion, while all the other typists mainly listened without intervening. The supervisors were silent in the first half of the discussion, however they became active when there was pressure to determine the results.

The topic chosen was how the work of the medical doctor (MD) will change when the speech recognition system becomes a mundane tool. The group figured that the MD would have more time for patients. The typists raised a practical procedure for con-

sideration: Will the MD record the patient data himself into the different systems in the future?

Hans: So as we've discussed, dictaphones have been in use, and secretaries used to type speeches. So previously, it was a straightforward process, in which the MD dictated and someone typed it onto paper. Nowadays, there are so many ICT systems, and they integrate in so many different ways, that MDs have to learn by heart what codes to use in order to transfer the data to the right places at the right time, so if the MD could…

Godmother: How has it changed?

Hans:..just concentrating on care work and then explaining it, without having to bother about how the system processes the information.

John: We face the problem that you mentioned, and which is a fact, that it is the MD who is finally responsible for it. This cannot ever be outsourced for any reason, but it still makes it a kind of small bottleneck in the process.

The workshop discussion hardly dealt with the future work of typists at all. The observer tried to remind participants of it:

Researcher: What's going to happen to the employee, to the typist?

John: That was thrown away.

This comment referred either to the inspiration card that was supposed to stimulate thoughts on the future typist's work or that this work would disappear as a job. A supervisor raised the patient perspective very strongly: "…in ten years' time, everything will work from the patient's perspective. The patient will enter their information into the systems or have body measurements taken, and the data will shift automatically into the systems." This was an ambitious and futuristic vision. The discussion shifted to the patient experience. A typist again raised the point from his own experience for discussion. Patients do not usually understand MDs' language, as he described:

Hans: When the personal data of the patients are entered into the database, is it available for the patients as well? Or do we need a feedback system that allows you to ask extra information? I've asked many friends after they've visited a doctor – what did he say? The reply is: I don't know.

Godmother: Or he doesn't remember.

Hans: They speak such a different language.

John: Exactly.

Hans: Can the patient consult virtually, or by email, that my patient data says this, can I get some extra information?

Interestingly, the typist recognized another bottleneck, which presents an opportunity for new work in the form of giving advice.

The godmother and the godfather constantly promoted the discussion by questioning or supporting comments, such as:

Godfather: In this phase, do we really want to get rid of typist work? Whose task is this streamlining? Do we focus on it as MD work or assistant work?

Godmother: When you said that the doctors speak a language that the patients don't understand. It's a challenge. How does digitalization help then, in order to make it clear?

Godmother: Help each other, please help now.

When the facilitators pushed participants to compress the perspective into one single vision, the group figured out a concept of effectiveness. The first vision they formed was: "Digitalization as a tool to make care more effective." A typist added: "and a better relationship between doctor and patient." The concept of digitalization as a formulation bothered many, so finally, after a godfather's intervening speech, the vision turned into: "Open patient data improves the care relationship and the effectiveness of care." Hans, who wrote the vision, was chosen to make a pitch speech for this. The typist was clearly nervous, but somehow assertive when it was his turn to make the speech in public.

Hans's oral presentation: The Medical Doctor does not use his time to dictate previous cases, but only dictate fresh research findings, the care plan and, for example, the admission note to x-ray. And speech recognition shows the text on the computer screen as fast as he dictates it. He corrects a few words that the machine has misheard. The text then shifts to our unit, where a careful office worker takes care that the information is put in the right places. The MD is likely to have left some sentence open to misinterpretation or double meaning, and makes a note of this: that could you please clarify. It is not delayed though, although it is noted and will be checked.

The pitch speech was a convincing, customer-oriented description, describing how the patient gets better treatment and enjoy a better care relationship when he is himself responsible for entering his own patient data into the system. What was surprising in the speech was that a new role emerged for the typist, as a kind of quality inspector, without having been formulated in the previous discussion. The supervisors were keen to listen to the speech, and did not feel the need to add a single word.

5.3   A story of the future typist in action

The aim of the second workshop, organized in March 2016, was to accelerate the future service experiments that were chosen after the first workshop. The main task was to envision and construct a story which concretizes the experiment and actualizes the future vision, and in which the workers and service users take on their future roles. The researchers provided two tools: 1) a profile template to fill in, concerning the description of the anticipated worker profile of a typical worker and a typical user, and 2) a story template, in which employees were asked to write the beginning, the solution (middle) and the grand finale of the story. This time the typists were put into their own group in order to be able to deepen their understanding of their future work. The group consisted of four male typists and one female typist, a researcher, a godmother, and a godfather.

At the beginning of the conversation, the employees mentioned that typists had no educational requirements for their job at present. As the problem for the story they chose a situation in which the speech recognition system misinterpreted the amount of a drug in a prescription. The group began to discuss whether the editor could correct the mistake without bothering the doctor. This would require both increasing em-

ployees' responsibility and increasing their knowledge regarding medicine, as the following excerpt shows:

Typist 1: What should I write? Speech recognition has misinterpreted the speech of the MD and the patient has been prescribed the wrong medicine. Something like that.

Godmother: The system simply made a mistake. But then, this is the problem, but how it is solved?

Typist 1: Let's assume that the editor [typist] discovers the mistake. The patient doesn't know the proper dosage.

John: It's the editor's task to notice it.

Godmother: Our task was to think about your role in the situation.

John: The editor's task is to notice the mistake.

Godmother: The editor discovers the mistake, and what does he do then?

Typist 2: We should be given more responsibility.

John: So, should we extend the editor's responsibilities, just like that? What would this involve?

Typist 2: Currently in some units, typists are allowed to correct a bit.

Typist 1: Oh, do they have official authorization?

Typist 2: Small mistakes may be corrected in some places.

Typist 1: I'd like to correct or add too, when I'm very sure about it, but I can't, I'm not allowed to.

Typist 2: There are different practices.

Godmother: In our case, we should think about the pros and cons.

Typist 2: If our knowledge increases, then responsibility can too.

The conversation indicated that in some contexts, typists were allowed to correct minor factual mistakes, but usually the MDs had to check each ambiguity themselves. Obviously, this slows down the flow of information to the patient. The godmother constantly asked questions to promote the discussion, but also gave the participants space for working out solutions. In the discussion, peer support was recognized as important in order to gain good quality texts.

During the workshop, a young female typist, Sandra, silently wrote down new areas of expertise into the worker profile description template. She volunteered when we

asked for story presenters. John and Sandra presented the story together to the other groups. Sandra started to depict a future multi-skilled employee:

"We would like to introduce you to an employee, Mikael West, 43 years old man. His title is editor or quality controller. We had different scenarios on what kind of work he would do in the future. In terms of education, we thought that in the future, recruitment straight from college may no longer be valid. He has theoretical education in quality control or nursing. Not in the sense that he would be able to drill a skull, but he is aware of what this entails. His duties include quality control, fixing mistakes, and he is perhaps specialized in some areas of medical expertise. He doesn't deal with all special sectors, but examines, for example, neurosurgery dictations. Collaboration with his colleagues is of course intense.

And about his motivation: He has a long work history at the hospital. He started as a typist but has now become an editor. He has some basic illnesses himself, so he may identify with the role of the patient. And this is the reason he aims for as perfect a result as possible. In the services he appreciates IT system that learn from mistakes, so that an MD may teach the program himself. For example, if a foreign doctor does not articulate very clearly, the speech recognition programme repairs it a bit and the text appears, saving the editor's time. Mikael is content, as he can avoid straining his hands, as he does not have to type everything, but only modify work here and there...."

Then John described the actions of the editor. The culmination of the story was that the editor was authorized to correct a mistake that required medical expertise.

John's oral presentation: I don't need to bother Doctor Pekka. He can continue playing golf. We have a trained editor who can immediately say that this is up the spout (there's a clear mistake). He can check the original dictation and find that the speech recognition system has misinterpreted it and that it should be something else. He can correct it himself, without bothering anyone else. He can probably consult his colleagues on the case (waving his hands back and forth) and ask for help. And the case is very quickly taken care of without having to bother the doctor. If there is a bigger problem, he consults the doctor. Such relatively trivial cases, which of course are not trivial to the patients, but trivial in terms of using time, can be solved in this same utopia in a jiffy. (The audience gave a big round of applause)

Figure 1. John and Sandra, typists, presenting future editors' expertise and actions

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The analysis of the workshops demonstrated how subtle intervention and outsider discussants (in this case a godmother or a godfather) may play a significant role in encouraging usually invisible workers to innovate. The empirical analysis highlighted the relational nature of agency (Donati and Archer 2015). Low educated workers may not feel justified in participating and contributing to the design of the future services

and new job tasks, if they are not invited to the development projects by their supervisors. The full potential of workers may not become visible if they are not encouraged to use their personal voices. The story also revealed how anticipating the way in which a future worker would act, makes borders of the different professions and their job descriptions visible and questionable.

5.4 How to prepare for the e-documentation and future skills of employees

The aim of the interviews of the management representatives and HRD was to understand the overall vision of the specialized medical care organization and its relation to its in-house support service unit. Furthermore, it was important to understand whether the organization took the "high road" or "low road" (Boud and al. 2006; Monk and al. 2013) in how they saw investments in learning and creating new skills among their employees if backstage work in its present form appeared to be at risk.

5.4.1 Managers as leaders of the change

The top management's vision of the entire specialized medical care seemed to prioritize cost-efficiency as the main motive for technological change, as described by one top manager:

"Our strategy and priority is e-service, e-Healthcare. This means that in practice, all the functions that are applicable will be transformed into a virtual reality in which a human being may get help for his problems, as an active agent. … The precondition for this is that we are able to change these practices in a way that everything that can be done without human hands is made without human hands. Because, ultimately 60% of our costs goes to human salaries, and the traditional way in which patients are called to the hospital to hear laboratory results has come to an end." (Manager, MD, 15)

One of the development managers however, pointed out that the impact of e-services should be examined on a longer time scale if we are to understand what kinds of savings they produce and how. This statement reflects a more doubtful view of digitalization.

The manager of the support service unit explained that the future service concept in medical documentation may be based on either front-end or back-end speech recognition. Radiologists who had already used speech recognition technology, and dictated only short implications, argued strongly for the front-end concept, but the support service unit also had to consider all the other medical professionals and their circumstances with the patients, leading to several tailor-made service concepts. Two contradicting viewpoints that would lead to different IT solutions and needs in terms of employee resources and their future competencies, were not yet decided.

"We don't know how this will be resolved, either 'traditional' or 'future solution for different users' will win. It may also turn out that we won't have the speech recognition at all, it will depend on the procurement process as well," (Manager 35)

– said the manager of the support service unit.

Against these alternative scenarios, it was understandable that employees (typists) or future users of the system, that is MDs, were not openly and widely informed about the direction of the future technological change, although it would influence on both groups. The manager of the support service unit was not concerned about the need to reduce person-years, because a high percentage of the personnel was to retire in the next few years.

The head of unit in charge of word processing services participated in the workshops organized by the researchers. After the second workshop, he said he was positively surprised at how sophisticated the job scenario presented by the typists had been. As a result of workers' empowerment, the managers decided to involve the workshop participators in the development projects for designing the future documentation service. This indicated a change to a more 'high road' strategy for treating the service workers as potential contributors to the technological transition.

5.4.2 Concerns of the Human Resource Managers

The upper level HR manager pointed out varied solutions for employees if some jobs disappeared because of technological change in the large organization. They may search for open vacancies in the hospital district as a whole. However, re-educating oneself for a different occupation is mainly on one's own responsibility, as she described:

"What is extremely important is that we as an organization can tell the people what is about to happen, and involve them in the change process. So that they realize in time, that oh, if I think of my future in advance, I realize that I don't have sufficient expertise for it and have to retrain. Because I think that part of expertise is to identify the direction that my work will take. What should I master and learn?" (HR 34)

The role of the HR of the entire hospital district is to train managers and supervisors of the organization to know how to lead the change.

The local HR manager of the support service unit admitted that demands for new word processing expertise are in the air, as he described:

"If we go into speech recognition, the work turns into editing. It's not about writing the text anymore. So you have to know language in a different way. Master the language and understand it in more depth." (HR 36).

However, he did not know where to get such training. Preparing the employees for radical changes was not easy, because "no absolute truth exists regarding how this will influence each occupation" (HR 36). Another challenge from the HR perspective will be how to hold on to the young and temporary employees who may have the necessary expertise, if typing work is to be terminated.

On the whole, from the backstage employee viewpoint, there was no concrete, widely influenced managerial actions for preparing for the technological changes in the e-documentation process. Instead, the managers focused on unfinished decision processes or complicated technology procurement processes. HR identified the future needs of new competencies in general, but trusted that employees themselves would somehow find their way if their work changed or jobs disappeared. They also seem to

be waiting for clearer decisions regarding future service process, before planning supportive training efforts for employees. This reflects a 'low road' strategy for creating new skills among employees on the part of the organization as a whole. However, the two workshops in which employees were involved signalled an opportunity and an insight for managers to involve employees in the implementation process.

6 Discussion

6.1 Summary of the main findings

The chapter highlighted the workplace- and job-level consequences and opportunities of digitalization in a health care organization. The results contribute to the employee-driven and human-centred perspective (Høyrup & a. 2012) in the digitalizing care service context, in particular internal support services in hospitals.

Previous research literature on the digitalization of services has tended to focus on the changing role of the customer and customer needs. The employee's role as a potential innovator of her/his future work and changing services has been neglected. We argue that the backstage worker can and should be involved in constructing future service work, even in such a case when service work in its current form is disappearing as it becomes digitally automatized. In this study, workshops provided a kind of safe arena for employees and the supervisors to ponder on the future work.

The analysis of the perspectives of managers and HR managers indicated a challenge of preparing employees and future users of the e-service before the decisions of the service concept and its technological solution were made. They were aware of the need for radical changes in the competencies of the employees, but before

knowing the direction of the change, the training efforts or even wider communication about the future change seemed obsolete.

Developmental actions and projects in service organizations should not only be concerned with future customer and employee experience, but should also design the future paths of customers and employees symmetrically. When services become increasingly digitalized, the fact does not change that both customers and employees are resource integrators in the value co-creation process (Edvardsson et al. 2011). However, the change is rather radical in both positions. It demands a new kind of active agency and readiness to adopt a new role with no clear pre-descriptions or certainty regarding the future service.

Our analysis indicated that a positive, empowering atmosphere, in addition to questions and envisioning tasks guiding employees in their potential future roles in the workshop process may lead employees to have insights into their future job descriptions. Intervenors, such as 'godfathers or godmothers' from other organizations may act as mentors in the process. Collaborative design in the workshops brought to light the relational aspects of agency, which reveals the interconnected nature of different practitioner groups. Participants were able to become aware of each other's support and resources, and understand how the relations between them influence their choices and possibilities (e.g., Donati and Archer 2015).

To sum up, we found that when services are digitalized and current jobs are at stake, employees may find new agency, in the same way as Cinderella, who rose into a new role in the fairy-tale. However, we need encouraging actions from managers and even outside intervenors, such as a fairy godmother, in order to trigger this.

6.2   Research implications

The study contributes to the debate on how automation may replace human work and how the employees may influence on their future work horizons (Arntz et al. 2016; Frey and Osborne 2013). The job task-level analysis indicates that if low educated workers' agency is encouraged in the organization, by providing them with a chance to influence future service and future work, these workers may orientate themselves into new tasks. Our case study reveals that technological reforms are not deterministic, but depend on how implementation is organized among employees and users. More task-level analyses of how jobs are actually automated and cases on how employees may have an impact on their future jobs, are needed. The agency of employees is relational and is an emerging phenomenon (Donate and Archer 2015), depending on whether supervisors, managers and HR adopt a high- or low-road strategy (Boud and al. 2006; Monk and al. 2013) concerning how early in the digitalization process of the service they are ready to invest in reskilling their staff.

6.3 Practical implications

We agree with Bowen (2016) that strategic HR management should focus on specifying the future employee roles and competencies that are essential to customer value creation and the success of IT-based service innovations. Shifting into new roles such as innovator, enabler or co-ordinator, or in our case quality control editor, may require active agency from employees, but also future-oriented training for increasing capabilities to adopt new roles. Service workers may become bridge-builders between ICT developers and future users. Their sensitive awareness of users' problems in using the system, as functions shift from backstage employees to users of the system, could be an asset both in training the users and making the system more user friendly (Hasu, 2000, also Åkesson and Edvardsson, 2008).

The role of HR management should be to provide supervisors with guidance on how to proactively manage radical changes. They could provide arenas, such as the workshops in this study, in which employees either become involved in the change processes or are allowed to imagine together how their jobs may change in the digitalization era.

Management needs to be alert to providing service workers with opportunities to foresee new kinds of work roles and tasks in time when their jobs are at stake as a result of major renewals in the service process. The task of managers is to identify the often hidden capacity of service workers, as in the story of Cinderella, when Prince Charming had to search for the owner of the glass slipper. The task of HR managers is to empower the employees so that they may be able to use their own agency in figuring out new job opportunities, as in the story of Cinderella the fairy godmother provides Cinderella new clothes to be able to participate to the royal ball.

6.4 Limitations of the study and avenues for future research

The findings of the study should be considered in light of the following limitations. First, the study opens up a dynamic from the perspective of only one case organization. This limits the degree to which findings can be generalized with confidence. No empirical studies concerning backstage workers in technological transition were available to enable to comparative or validating observations. However, this also makes this study a pioneer. Secondly, the ethnographic data were collected within a rather short period, so the interpretations were based on a cross-sectional view of the long-term technological change in Finnish health care and its digitalization. The data were collected from autumn 2015 till December 2016; this period was short as it was

a small part of a larger systemic change in the patient information systems of the entire hospital district.

As regards avenues for future research, this study presents several possibilities. First, the time period for studying how the agency of employees develops when decisions regarding IT systems are made could be extended; and the actions of managers, employees, and the users (MDs) of the possible speech recognition systems further observed. Secondly, this study may inspire investigations into other occupations that are at stake in the digital era, and into how the agency of other employees differs from that of the typists.

It would also be interesting to examine how organizations prepare their personnel for radical technological change in service processes, and to evaluate whether there is a tendency toward technology-oriented, customer-oriented or employee-oriented strategy guiding in the transitional phase. It is clear that studies of both hidden and visible reasons for how and why digitalization is changing work; both backstage and frontstage service work, are very much needed.

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Table 1. Typists' motivation and developmental horizons reflecting their agency

Typist type	Motivation	Change horizon
Quality control editor	Ambitious in terms of quality and rapidity of the service Appreciates independent work without interruptions	Eager to learn and take part in speech recognition projects, expects editing work to be a positive and more accountable alternative to typing
ICT bridge-builder	Has good ICT skills and pays attention to complaints about user-friendliness, likes independent work, but is happy to guide others as well	May become a lead user or trainer of speech recognition system to peers and doctors
Clinically oriented worker	Is interested in the contents of the dictations, wants to learn more about medical details, feels to be a part in the care process	May potentially discover new work between doctors and the patients, interested in specializing in medical glossary, humanization of current typing factory
Efficient home-worker	Thinks that mobile working is well combined with hobbies or family life. Virtual connections with peers is not a problem	Ergonomics and security could be improved as could social support at work