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Article

Digitalisation as a Prospect for Work–Life Balance and Inclusion: A Natural Experiment in German Hospitals

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Abstract
Digitalisation has a wide range of impacts on the workplace, such as enabling new work models with flexible work schedules, changing work content, or increasing workplace control. These changes directly affect not only individuals' work but also their private lives. Scholars theorise that digitalisation either enables or impedes workers' ability to maximise their work–life balance, which in turn fosters or inhibits the social inclusion of some societal groups and reduces or reproduces social inequalities. Focusing on the German healthcare sector, I explore the impact of using networked digital technologies on work–life balance, and whether it influences gender and educational inequalities. Pressured by government, economic concerns, and medical innovation, this sector is undergoing a transformation process that is expediting the introduction of new networked digital technologies. Thus, it provides an ideal setting for empirical investigation, as one core assumption about digitalisation is that technological innovation at work has societal consequences that must be individually mastered. To assess the relationship between digitalisation and work–life balance, I use survey data from hospital employees on the use of networked digital technologies and individual outcomes. The research is designed as a natural experiment. The treatment group comprises employees at a university hospital equipped with cutting-edge networked digital technologies (N = 1,117); the control group comprises employees at several church-owned hospitals (N = 415) with a level of digitalisation corresponding to the average for the sector. I first discuss confounders and then employ quantitative methods to establish a link between digitalisation and work–life balance, assess its direction, and address gender and educational inequalities.

Keywords
digitalisation; Germany; healthcare; social inclusion; social inequality; work–life balance

Issue
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1. Introduction

For two decades now, there has been widespread debate among academic, political, and civil actors about the consequences of new technological advancements under the label of "digitalisation." Harteis (2018, p. v) argued that "digitalization generates technological challenges for individuals, organizations and societies." As this process does not affect only specific industries but rather all economic sectors, employees in almost all occupations are faced with digitalisation challenges to a certain degree. In addition to changing skill requirements, job content, and the structure of the labour market, digitalisation also affects workers and their lives directly (OECD, 2019). According to the ongoing debate, digitalisation permeates all fields of individuals' public, private, and work lives (Heisler & Meier, 2020). One of the most prominent publicly discussed consequences of digitalisation is its impact on work–life balance.

Scholars have suggested that these new technologies greatly improve the quality of employees' work lives (Harteis, 2018). At the same time, digitalisation can either attenuate, exacerbate, or even create social inequalities in the ability of some groups to balance

their work lives and private lives (Abendroth & Reimann, 2018; Ahlers et al., 2018; Carstensen & Demuth, 2020). In this article, I focus on women and highly educated workers, as digitalisation has been theorised to particularly influence the work–life balance of these two groups (Bjärntoft et al., 2020; Fontinha et al., 2019; König & Cesinger, 2015; Kurowska, 2020). Whereas scholars postulate that digital tools help women achieve a better work–life balance, they assume that highly educated workers in knowledge-based jobs—especially in jobs that involve mostly analytical tasks—experience greater work stress and density because of digitalisation (Antoni et al., 2013). This in turn might enhance the social inclusion of the first group and worsen that of the second (Schier et al., 2011). For instance, because gendered role expectations persist, networked digital technologies might enable women—especially mothers—to better balance their allocation of resources (e.g., time or energy) across their private and working roles, potentially freeing up their time for other social activities (Eikhof, 2016), or it might incentivise women with family responsibilities to re-enter the labour market (Khallash & Kruse, 2012). However, the assumed high demands on highly educated workers might result in fewer resources for friendship, family, or other social domains, which might force them to withdraw from their social and family lives (Antoni et al., 2013; Tausig & Fenwick, 2001). In this study, I investigate two closely connected research questions. First, I examine the link between digitalisation and work–life balance. Second, I explore whether digital transformation decreases existing inequalities in work–life balance for women and increases existing inequalities in work–life balance for highly educated knowledge workers with a university degree, which may foster the social inclusion of the first group and lead to the social exclusion of the second.

The topic of digitalisation and work–life balance has become more salient since the surge in working from home during the Covid-19 pandemic, when a large proportion of firms—either voluntarily or by government decree—changed their policies to allow employees to have autonomous flexibility over their working hours and work location (Rahnenführer, 2022). However, digitalisation does not affect work–life balance only through telecommuting. The implementation of networked digital technologies also increases workers' productivity by either enabling them to complete their tasks faster or by taking over tasks through automation, thereby freeing up their schedule to complete other tasks. This often leads to an increase in work intensity and tighter deadlines, which in turn increases stress and spillover into other life domains, such as private life (Korunka & Hoonakker, 2014).

All of this underlines the importance of looking at the effects of digitalisation on work–life balance. Investigating the impacts of digitalisation on individuals is of further scientific relevance, as scholars have characterised digitalisation as a socio-technical process that encompasses technological, non-technological, economic, and social aspects. In this process, digitalisation brings together the social and technical subsystems as interdependent aspects of a work system (Hirsch-Kreinsen, 2020). To put it in simpler terms: The introduction of networked digital technologies takes place on a societal level and has consequences beyond occupations or tasks; it is socially prepared and discursively negotiated (Henke et al., 2018). "Networked" means that these technologies facilitate a connection between humans and/or machines in a global operation system (Becker & Spöttl, 2019; Seibt et al., 2019). Examples of such technologies include cloud services; messaging apps, the Internet of Things (IoT); smart devices such as tablets, wearables, or robotic-assisted systems; virtual reality/augmented reality (VR/AR) applications; algorithms; and artificial intelligence (AI). However, the social preparation and discursive negotiation of digitalisation require legitimation and acceptance by workers. This is influenced in turn by the social impact of successful digital transformations expressed through individual factors such as work–life balance (Hirsch-Kreinsen, 2020). I believe that by examining whether networked digital technologies improve or worsen workers' work–life balance and reproduce or reduce social inequalities, I can contribute some empirical evidence to this discussion.

Germany's healthcare sector is an excellent setting for this empirical research for two reasons: First, it has been widely affected by digitalisation in recent years; second, it is a growing sector faced with staff and skill shortages and demographic developments such as an ageing society and the loss of a large part of their personnel in the coming years due to retirement (Ehrhard, 2014). It has been confronted with a major restructuring process, particularly in terms of the organisation of care, rationalisation, changing work processes and job profiles of healthcare professionals, and the introduction of new and complex technologies (Kirpal, 2011). It is also an interesting sector for investigating the changes in work–life balance induced by technological change. Almost all occupations in this sector are subject to high work stress and density, long work shifts, and mental and physical challenges, and personnel often prioritise their work over their private lives (Körber et al., 2018; Mohan, 2019). Research has demonstrated that the level of work–life balance mediates these negative outcomes (Poulose & Sudarsan, 2017). The macroeconomic challenges mentioned above have the potential to greatly impact work–life balance, highlighting the suitability of this sector for investigating how technological developments influence this balance. On the other hand, the German healthcare sector employs an above-average share of female personnel as well as a large number of university-educated and skilled personnel (Ehrhard, 2014), further making it a sound setting for investigating whether digitalisation influences social inequalities in work–life balance for female staff and highly educated

staff. Consequently, I use survey data from a research project on the use of networked digital technologies and individual outcomes collected from employees at several German hospitals.

Looking at multiple hospitals allowed me to administer a survey in a natural experimental setting and to compare one hospital with cutting-edge technologies (e.g., robotic-assisted systems, VR/AR technologies) and widespread use of tablets and smartphones with several regular hospitals with less advanced and pervasive technologies. For more information on the research project, the survey, and how I was able to identify a suitable natural experimental setting see Melchior et al. (in press). At the same time, I can compare managerial occupations, which allow telecommuting, with occupations such as nursing, which have strict on-site work schedules. I am also able to compare across genders, different levels of educational attainment, and age groups.

2. The Concept of Work–Life Balance and the Impact of Digitalisation

Work–life balance is a popular concept in research on the impact of digitalisation. Lee and Sirgy (2019, p. 358) identified three major theoretical approaches to work–life balance: "(1) management of role engagement, (2) management of role conflict, and (3) management of life domain satisfaction." They and noted that these three approaches "reflect how individuals manage the interplay between/among life domain satisfaction in a manner to increase overall life satisfaction." Some empirical studies have measured all three—or two of the three—dimensions of work–life balance separately and compared the results. More recently, other studies have used a single instrument capturing all three dimensions. I employ the latter strategy in my empirical operationalisation of work–life balance, but will also compare this operationalisation with a measurement for the third approach.

The first approach, management of role engagement, is a resource-based approach focusing on individuals' ability to achieve work–life balance "through attentive engagement in multiple roles…and allocation of time and psychological energy in a balanced way in work and nonwork domains" (Lee & Sirgy, 2019, p. 358). This approach measures work–life balance by focusing on the balancing of time and energy to meet demands from various life domains (Drobnič & León, 2013; Greenhaus & ten Brummelhuis, 2013). The second approach, management of role conflict, is also resource-based. It refers to the achievement of work–life balance through the effective management of conflict across social roles. This approach measures work–life balance by estimating the fit between role demands (e.g., parenting) and the required resources. If the demands are not met, this may lead to role conflict or interference (Lee & Sirgy, 2019; Michel et al., 2013). The last approach, management of life domain satisfaction, assumes that individuals achieve work–life balance when they successfully balance satisfaction across multiple life domains. There are multiple ways in which this is done. Individuals might experience (a) positive affect spillover from one life domain to another; (b) domain compensation, where they allocate more time and energy to satisfying domains than to dissatisfying domains; or (c) segmentation, where they "prevent spillover of negative affect from one domain to other domains by erecting a barrier around the dissatisfying domain" (Lee & Sirgy, 2019, pp. 365, 372, 375; see also Fontinha et al., 2019).

The question remains as to the mechanisms through which digitalisation affects work–life balance. One of the most salient impacts of the implementation of new digital technologies is the restructuring of work in occupations. However, not every occupation is subject to the same type of restructuring, and not every digital tool gives rise to the same causal pathways. Some researchers argue that modern digital tools give employees more control over their work schedules than ever before (e.g., Böhle et al., 2018). Organisational policies that allow schedule flexibility enable workers to have a certain degree of autonomy over their working hours. Digitalisation allows for the implementation of telecommuting and therefore leads to an increase in work flexibility and the blurring or dissolution of boundaries between work and other life domains (Böhle et al., 2018). Thus, workers may be able to better organise their social lives, leisure lives, and family lives, and reconcile these domains with their work lives (improved management of role engagement and conflict). The ability to telecommute further influences individuals' control over their work–life balance (Lee & Sirgy, 2019; Vargas Llave & Weber, 2020). By contrast, other researchers view digitalisation as the technological basis for increased control and supervision of work and argue that it might increase rather than diminish work intensity and work stress (e.g., Baethge-Kinsky et al., 2018). Figure 1 depicts the mechanisms through which different networked digital technologies might increase or decrease WLB and presents possible explanations for these effects.

Combining the mechanisms outlined in Figure 1 with the previously introduced theoretical approaches shows that digital technological inventions and flexible schedules allow workers to maximise their work–life balance by different means. In line with these theoretical approaches, telecommuting and flexible schedules allow individuals "to use the saved commuting time and energy to engage in multiple social roles" (Lee & Sirgy, 2019, p. 372). Moreover, they can "engage in multiple roles in a place of their choice," and this "integration of social roles facilitates the transfer of skills and experiences from work to nonwork domains and vice versa" (Lee & Sirgy, 2019, p. 376). Further benefits might also be the minimisation of role conflict across life domains and increased role engagement in satisfying domains (Lee & Sirgy, 2019, p. 376). In light of the particular difficulties in maximising work–life balance in the healthcare sector (Körber et al.,

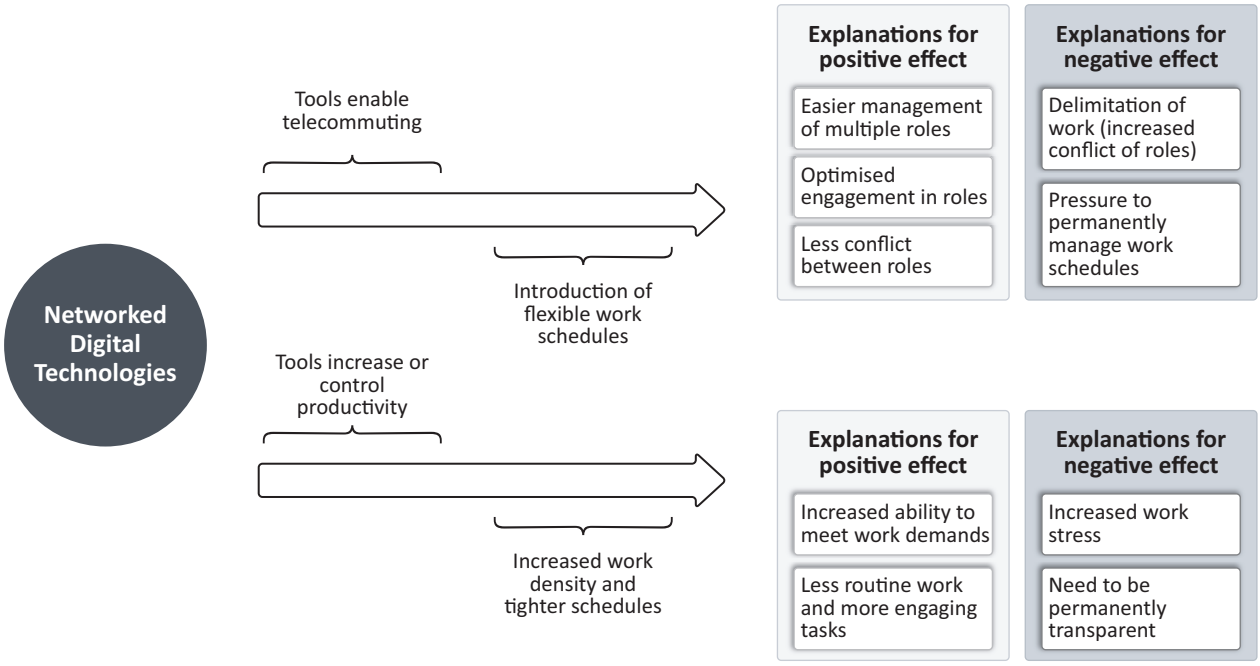

Figure 1. Conceptual model of the mechanisms through which different types of networked digital technologies influence work–life balance.

2018; Mohan, 2019), using that setting may emphasise the robustness of this research. Based on these deliberations, I hypothesise:

> H1a: The more a workplace is permeated by networked digital technologies, the easier it is for employees to maximise their work–life balance.

However, some scholars have argued that digital transformation leads to the blurring or dissolution of the boundaries between work and other domains (Schier et al., 2011; see also Fontinha et al., 2019; Voß, 1998), and that this not only offers opportunities but also poses risks. According to this strand of research, digitalisation increases the pressure on workers to permanently manage their schedules. It thus becomes harder for them to organize their work, private, and family lives, which increases their risks to health and social exclusion (Schier et al., 2011). I thus propose a counter-hypothesis:

> H1b: The more a workplace is permeated by networked digital technologies, the harder it is for employees to maximise their work–life balance.

As mentioned earlier, not every occupation is subject to the same restructuring processes. In some occupations, it is hardly possible to perform tasks from home—for example, providing medical treatment to hospital inpatients. However, one of my opening arguments was that digitalisation does not only affect work–life balance through telecommuting, but rather that the implementation of new technologies increases workers' productivity, which often leads to an increase in work intensity and tighter deadlines, which then increases stress and spillover into other domains (Korunka & Hoonakker, 2014). Thus, hospital personnel in workplaces that are highly permeated by networked digital technologies should be equally able or unable to maximise their work–life balance, regardless of whether telecommuting is possible or not. Thus, I hypothesise:

> H2: The effect of digitalisation on work–life balance is similar across occupations.

Lastly, in my second research question I investigate whether the effect of digitalisation is the same for the two social groups that are the focus of this article, namely (a) highly educated workers with a university degree who work in knowledge-intensive occupations and (b) women. Regarding the first group, theoretical contributions and empirical research suggest that digitalisation increases work-related stress and job density and blurs the boundaries between work and private life (Antoni et al., 2013), thereby impeding the ability of these workers to maximise their work–life balance (Fontinha et al., 2019). This, in turn, might translate into less time for family and friends and civic engagement and might therefore increase this group's risk of social exclusion (Schier et al., 2011; Yates & Leach, 2006). Hospital settings are well suited to examining these assumptions, as the occupations they offer enable one to distinguish between low-educated manual workers and highly educated knowledge workers. Based on this, I hypothesise:

> H3a: Digitalisation increases social inequalities in work–life balance for highly educated knowledge workers with a university degree.

Regarding the second group, research indicates that women already have difficulties balancing their work and private lives (Bjärntoft et al., 2020; König & Cesinger, 2015; Kurowska, 2020). This is due mainly to culturally gendered role expectations that require women to perform unpaid work in the form of caregiving or housework regardless of their occupational status. This socially constructed unequal distribution of responsibilities severely limits women's ability to effectively manage role engagement and role conflict by allocating their available resources in a balanced way across paid work, unpaid work, leisure time, or other social activities, thereby resulting in social exclusion (Kurowska, 2020). Even flexible work schedules or working from home are not supposed to alleviate this problem. Although some authors have argued that digitalisation either alleviates or exacerbates these inequalities (Abendroth & Reimann, 2018; Ahlers et al., 2018; Carstensen & Demuth, 2020), empirical evidence suggests the following hypothesis:

> H3b: Digitalisation decreases social inequalities in work–life balance for women.

3. Research Design and Data

This study is designed as a natural experiment—that is, an experiment in which a treatment is not introduced by the researcher but rather occurs naturally (Craig et al., 2017; Dunning, 2012). I believe this design is best suited to answer my research question, as conducting a true experiment where I would have to introduce costly networked digital technologies at one workplace would not be feasible, and longitudinal data on the introduction of such technologies are not currently available. Highlighting the potential of natural experiments to improve the quality of causal inferences in the social sciences, Dunning (2012, p. 3) noted:

> Here we find observational settings in which causes are randomly, or as good as randomly, assigned among some set of units, such as individuals, towns, districts, or even countries. Simple comparisons across units exposed to the presence or absence of a cause can then provide credible evidence for causal effects, because random or as-if random assignment obviates confounding. Natural experiments can help overcome the substantial obstacles to drawing causal inferences from observational data.

The data for my analysis stem from a mixed-method research project in which our research team was able to identify a suitable setting for a natural experiment after applying a multi-method process strategy to investigate the digitalisation of Germany's healthcare sector. For this project, we collected qualitative and quantitative contextual information (for more information on design, sampling, and data collection see Melchior et al., in press). With this information, we were able to identify a suitable treatment group and control group for quantitative empirical investigation and to validate this assertion as recommended by Dunning (2012). As the treatment group for the research project, we selected a German university hospital; as the control group, we selected several hospitals run by a church-owned foundation, which is common for smaller hospitals in Germany. We conducted an online survey of all employees, which was administered by the hospitals themselves from June to September 2022. We received 1,117 responses for the treatment group, which represented a response rate of about 15 percent, and 415 responses for the control group. Links to the survey were sent by the employers to all employees through their own internal communication channels (e.g., intranet, email newsletter, direct messages). Employees were asked to participate voluntarily during working hours. We had to obtain approval of the questionnaire content from the works committee and the data protection officer at each hospital.

For the control group, I knew in advance that one-third of the employees were deployed in multiple hospitals within the foundation. Therefore, I clustered all employees into one control group for further analysis. Looking at demographic variables, I found that the surveyed samples were largely representative of their respective populations. Table 1 provides a description of the demographic characteristics of the control group and treatment group samples. Chi-square tests showed significant differences between the control group and the treatment group samples in terms of the distribution of demographic characteristics, which I will need to account for in my empirical strategy.

The difficulty was then to verify that a lower level of digitalisation was due to insufficient financial resources or managerial preferences (exogenous) rather than to employees' unwillingness or lack of skills to use these technologies (endogenous). Following Dunning's (2012) recommendation for improving the quality of causal inferences in natural experiments, I considered qualitative study results (Melchior et al., in press) to check these conditions. I also included items in the questionnaire to investigate (a) employees' feelings towards digitalisation, (b) their perception of the positivity of the organisational climate towards the introduction of networked digital technologies (see Table 2), (c) whether new technologies had been introduced during the past two years, (d) whether telecommuting (mobile work or working from home) was allowed, and (e) whether telecommuting was performed outside or during regular working hours (see Table 3). Looking at these items, there were no significant differences across groups, except that mobile work or working from home was more frequently performed in the treatment group, regardless of existing work regulations. I can therefore safely assume that the employees are not the cause of differences in digitalisation, and that these differences are entirely exogenous.

To ensure that respondents answered these questions based on a similar understanding of networked

digital technologies, and because the survey was self-administered, we provided an easily understandable description of networked digital technologies at the beginning of the survey. The translation of the definition is as follows:

> Please read the following text carefully.
>
> In the survey we will repeatedly refer to networked digital technologies. By this we mean technologies that create connections between humans, machines, tools, and objects. These technologies therefore connect either:
>
> - hardware devices to each other, and/or
> - software programs to each other, and/or
> - humans to each other.
>
> Examples of networked digital technologies are:
>
> - cloud services, messaging apps
> - electronic patient records, telemedicine
> - smart devices such as tablets or robotic-assisted systems (e.g., da Vinci)
> - VR/AR applications, as well as algorithms that are used, for example, for treatment planning, billing, or evaluation of patient data

Table 1. Demographic characteristics of the control group and treatment group samples.

	Treatment				
	No.		Yes		
	n	%	*n*	%	*p* value [a]
Occupational group					
Medical professionals	55	13.5	97	8.9	.000
Medical-technical assistants	10	2.5	111	10.1	
Nursing professionals	95	23.4	181	16.5	
IT personnel	25	6.2	62	5.7	
Managerial, accounting, and HR personnel	129	31.8	355	32.4	
Other medical personnel	36	8.9	174	15.9	
Other non-medical personnel	56	13.8	114	10.4	
Total	406	100	1,094	100	
Gender					.042
Female	249	62.1	736	67.7	
Male	152	37.9	351	32.3	
Total	401	100	1,087	100	
Age group					.033
18–24	11	2.8	69	6.3	
25–34	79	19.8	253	23.1	
35–44	84	21.1	218	19.9	
45–54	105	26.3	249	22.7	
55 or older	120	30.1	307	28.0	
Total	399	100	1,096	100	
Educational attainment					.153
No vocational training	8	2.0	42	3.8	
Lower secondary education + vocational training	12	3.0	28	2.6	
Intermediate sec. education + vocational training	100	24.6	224	20.4	
Higher sec. education + vocational training	116	28.6	304	27.7	
University degree	170	41.9	500	45.5	
Total	406	100	1,098	100	

Note: [a] Differences between the control group and the treatment group according to the chi-square test of association.

Table 2. Mean value of indices to assess the eligibility of the control group.

	Treatment			
	No.	Yes	t-test *p* value	Cronbach's *α*
Positive affective opinion index	13.57 (0.21)	13.76 (0.12)	.3979	.79
Positive organisational climate index	7.31 (0.14)	7.54 (0.08)	.1372	.72

Table 3. Other variables to assess the eligibility of the control group.

	Treatment				
	No.		Yes		
	n	%	*n*	%	*p* value [a]
New networked digital technologies introduced in the past two years					.306
Yes	284	74.5	671	71.8	
No	97	25.5	264	28.2	
Total	381	100	935	100	
Mobile work allowed					.206
No	254	64.3	614	58	
Yes, several times per year	38	9.6	134	12.7	
Yes, several times per month	43	10.9	132	12.5	
Yes, several times per week	49	12.4	154	14.5	
Yes, every day	11	2.8	25	2.4	
Total	395	100	1,059	100	
When mobile work is performed					.008
I don't work from home or remotely	199	50.8	473	45.5	
Only outside regular working hours	40	10.2	68	6.5	
Only during regular working hours	66	16.8	223	21.5	
Both outside and during regular working hours	87	22.2	275	26.5	
Total	392	100	1,039	100	

Note: [a] Differences between the control group and treatment group according to the chi-square test of association.

As a last step, I addressed whether contextual conditions in the experimental setting—specifically, the church affiliation of the hospitals in the control group—might confound the dependent variable, work–life balance. I have several reasons to assume that this is not the case—or that if it is, it does not severely bias my data. First, church-owned foundations or hospitals are common in Germany. About one-third of all hospitals in the country are church-owned, making the churches one of the biggest employers in the healthcare market (Bölt, 2023; Fischer, 2009). They are thus obliged to act similarly to other market competitors. Second, we checked whether having a Christian denomination was a prerequisite for recruitment in the control group and found that this was not the case. Thus, recruitment conditions were similar for both groups. This is due mainly to the high demand for personnel at all German hospitals (Fischer, 2009; Minz et al., 2023). Recent court rulings even prevent religious hospitals from inquiring about an applicant's denomination (Reichold, 2020). Lastly, the qualification of hospital personnel is strictly controlled by the standardised German education system, and education is delivered mainly at public vocational schools or universities, thus limiting the churches' influence (Klauber et al., 2023). Unfortunately, we could not include items on religious values in the survey to account for this possible confounder. However, if religious beliefs do confound domain satisfaction and work–life balance, research indicates that congruence between the religious values of employees and employers would increase the effect for my control group, especially as it is in the healthcare sector (see Héliot et al., 2020).

3.1. Measuring Work–Life Balance and Explanatory Variables

In line with the theoretical approaches outlined in Section 2, I implemented two different operationalisations of work–life balance in the survey. The first operationalisation was based on the management of life domain satisfaction approach. To measure this aspect, I implemented three survey questions asking respondents to rate on an 11-point scale their level of satisfaction with each of the following domains: their work, their friends, and their family. I then created a variable by subtracting the average of a respondent's score on satisfaction with their friends and satisfaction with their family from their score on satisfaction with their working life. A zero value on this variable indicates that the respondent had maximised their work–life balance, a negative value indicates that the respondent was more satisfied with their work life than with their private life, and a positive value indicates that they were more satisfied with their private life.

The second operationalisation of work–life balance was a version of the Trier Short Scale for Measuring Work–Life Balance (TSK–WLB), an instrument developed for use in surveys by Syrek et al. (2011). This scale comprises items covering all three theoretical approaches to work–life balance, namely (a) management of role engagement, (b) management of role conflict, (c) and management of life domain satisfaction. The instrument was further validated by Gundlach and Korff (2015) who supplemented it with an item from the work–family conflict scale proposed by Netemeyer et al. (1996). I used

this supplemented—6-item—version of the TSK–WLB for the survey, and I validated it using factor analysis. My findings were consistent with those of Gundlach and Korff (2015); Cronbach's alpha was .907 for the treatment group and .922 for the control group. I averaged the scores on the six items to create an index measuring how successful respondents were at maximising their work–life balance. Higher values on this index indicate improved work–life balance.

Further explanatory variables were occupation, gender, age, and qualifications. To prevent the possibility of identifying individual employees, the works councils at the participating hospitals requested that we measure only broad occupational groups and age cohorts and that we use a dichotomous measure of gender identity (male/female). Due to concerns of the works councils that specific employees might be identifiable, the survey included only broad occupational groups and age cohorts, and male or female gender identity. To measure respondents' qualifications, I constructed a composite variable in accordance with the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) classification. For this, I used responses to two survey questions measuring the respondent's highest general school-leaving qualification and highest vocational qualification. This variable grouped respondents into five educational attainment groups: no vocational training; lower secondary education and vocational training; intermediate secondary education and vocational training; higher secondary education and vocational training; and tertiary education. I also used a sum index of networked digital technologies usage, which was derived from several items measuring the frequency of using a specific tool; the maximum value indicates not only high frequency of networked digital technologies usage but also high complexity (Melchior et al., in press).

3.2. Methodological Approach

To test my hypotheses, I opted for two different approaches. To test H1a, H1b, and H2, I first looked at simple mean differences between the treatment group and the control group to obtain a naive estimate of the average treatment effect (ATE). Second, to improve my estimation, I used regression adjustment to account for differences in sample composition between the two groups (Negi & Wooldridge, 2021). Due to methodological concerns, I refrained from including propensity score matching (see King & Nielsen, 2019). However, when I applied this method as a robustness check, I obtained similar results, which underlines the robustness of my findings. Ideally, I would have included performed job tasks as a control (Friedrich et al., 2021). However, as the task-based approach considers occupations to be aggregations of performed tasks (Dengler et al., 2014), I argue that using occupational groups is an optimal approximation of accounting for task differences in this setting. Hence, I opted to use occupational group, age, and education for the regression adjustment. Lastly, to test H3a and H3b, I used simple linear regressions with interaction effects between the sum index of networked digital technology usage and (a) qualifications and (b) gender, with occupational group and age as controls.

4. Results

The mean of the domain-satisfaction-based work–life balance variable was 1.29 with a standard error of .11 for the control group and 1.16 with a standard error of .07 for the treatment group. Therefore, the naive estimate of the ATE for this variable was −.13. Considering that values closer to 0 indicate an improvement in work–life balance, the value −.13 means that the treatment group was better able to manage their domain satisfactions. This supports H1a rather than the counter-hypothesis, H1b.

By looking at the mean values for each domain separately, I could also investigate what was driving this effect. With a mean value in the friend and family domains of 7.9 (*SE* .09) for the control group and 7.64 (*SE* .06) for the treatment group, and a mean value in the work domain of 6.59 (*SE* .11) for the control group and 6.47 (*SE* .06) for the treatment group, the control group was generally more satisfied across domains. As discussed in Section 3, this might be due to their religiousness. Nevertheless, the relatively large difference between their satisfaction with their work lives and their private lives indicates that they employed some sort of segmentation strategy. For the treatment group, on the other hand, it seems that more digitalisation equalised their domain satisfactions. This suggests that digitalisation has a spillover effect on work–life balance. However, I could not assess whether dissatisfaction with work influenced satisfaction with friends and family or vice versa.

My second operationalisation of work–life balance provided more information in this regard. Table 4 shows that the treatment group was better able to balance their work and private lives. This provides further support for H1a rather than the counter-hypothesis, H1b. I also checked whether the ATE was equal across occupational groups (H2). The direction of the effect was mostly consistent across groups and positive, except for IT personnel and other non-medical personnel, who had negative values. The degree of digitalisation experienced by these two occupational groups was very similar across hospitals, with IT personnel having the highest possible degree of digitalisation of all occupations, and other non-medical personnel having the lowest (as this group includes, e.g., social workers, tradespeople, janitors, and cleaners). Therefore, these groups are outliers in terms of the treatment. The different direction of the effect might be due, on the one hand, to an overvaluation of work–life balance caused by some bias in the control group due to the religious beliefs of the employer. This would suggest that the positive effect of digitalisation on work–life balance might be even higher for all other effects found. On the other hand, the different direction

Table 4. Mean scores on the TSK–WLB for different occupational groups in the treatment and control groups and for the treatment and control groups as a whole.

	Treatment		
	No.	Yes	Naive ATE
Occupational group			
Medical professionals	14.51 (.94)	16.18 (0.69)	1.67
Medical-technical assistants	18.10 (1.95)	19.59 (0.63)	1.49
Nursing professionals	17.44 (.67)	17.75 (0.51)	0.31
IT personnel	21.92 (1.27)	19.98 (0.70)	−1.94
Managerial, accounting, and HR personnel	20.53 (.55)	21.07 (0.32)	0.54
Other medical personnel	19.24 (.94)	20.12 (0.44)	0.88
Other non-medical personnel	19.70 (.91)	19.51 (0.54)	−0.19
Total	18.79 (.34)	19.56 (0.19)	0.77

Note: Standard errors are in parentheses.

of the effect in the case of IT personnel might be due to the small sample size, and the close-to-zero value for non-medical personnel suggests that this broad occupational group was not homogeneous across the two samples. In sum, the naive estimates of the ATE for the two dependent variables show an improvement in work–life balance for the treatment group, supporting both H1a and H2.

In light of the differences in sample composition between the treatment group and the control group, I also used regression adjustment to investigate the robustness of my findings. The results are reported in Table 5. They indicate that even after adjusting for group differences, the potential outcome means were very similar to the unadjusted means in both samples. Furthermore, the adjusted ATE increase was somewhat comparable to the unadjusted increase, albeit very small. However, the adjusted ATE of the domain-satisfaction-based operationalisation of work–life balance was not statistically significant, whereas the adjusted ATE of the second operationalisation based on the TSK–WLB was. These findings suggest that the positive effect of digitalisation on work–life balance might best be explained by employees' improved ability to optimise their management of role engagement and role conflict rather than by their improved domain satisfactions.

Lastly, I also investigated whether digitalisation improves work–life balance for personnel with a university degree and for women. For this purpose, I ran several models. First, I investigated the effect of qualification and gender on work–life balance separately while controlling for age and occupation. I found a significant and relevant effect of having a university degree compared with having a low level of education in the treatment group sample but not in the control group sample. I then included an interaction between an individual-level measurement of the frequency of using networked digital technologies at the workplace and the qualification variable. The results of this model are depicted in Figure 2a. Contrary to my hypothesis (H3a), I did not find that using networked digital technologies decreased work–life balance for highly educated personnel. Indeed, I found that networked digital technology usage increased—albeit statistically insignificantly—the work–life balance of personnel with no vocational training.

I performed the same strategy to investigate gender inequality in work–life balance. Here I was unable to replicate a significant effect for gender when including occupational groups. Indeed, I found that occupation seemed to be the main predictor of inequality in work–life balance. As Germany has a gendered labour market (Drobnič & León, 2013), this finding could indicate that some of the findings on gender inequality in work–life balance are due to job characteristics. Nevertheless, I also included an interaction to further investigate this. Once I included the interaction term, all explanatory variables became significant. The results are depicted in Figure 2b, which shows that the more often networked digital technologies were used at a workplace, the better women could balance their work and private lives. Thus, H3b is supported.

Table 5. Regression-adjusted potential outcome means and ATEs.

	Treatment		
	No.	Yes	ATE
Operationalisation of work–life balance			
Management of life domain satisfaction	1.3*** (.11)	1.16*** (.07)	−.14 (.13)
TSK–WLB	18.79*** (.33)	19.57*** (.19)	.78* (.38)

Notes: Standard errors are in parentheses; + p < .1, * p < .05, ** p < .01, *** p < 0.01.

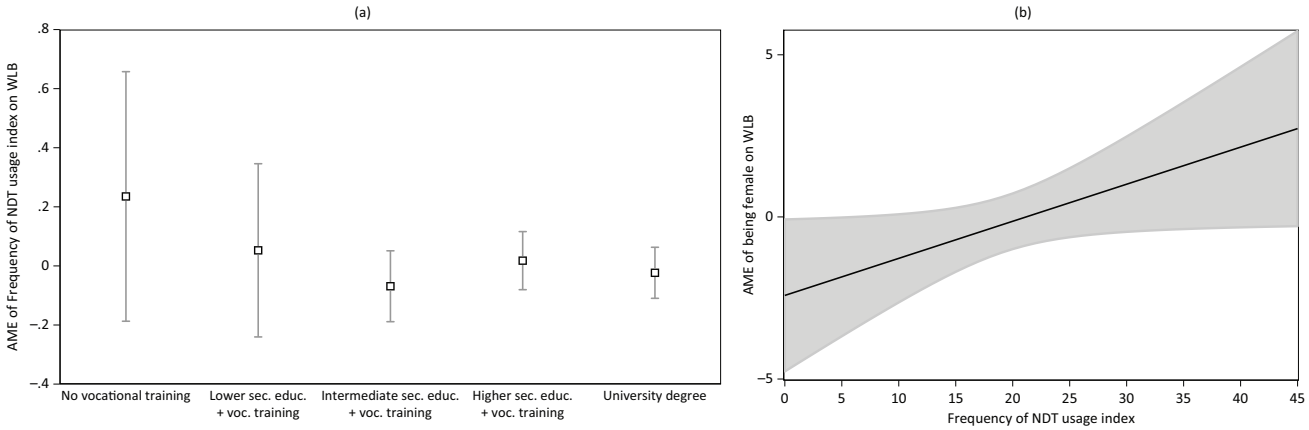

Figure 2. Average marginal effect on work–life balance (TSK–WLB operationalisation) for the interaction between the use of networked digital technologies and qualification (a) and gender (b). Notes: Interactions were included in two separate models; further control variables were age group and occupation; NDT stands for networked digital technologies; WLB stands for work–life balance.

5. Discussion

My aim in this study was to contribute to the ongoing debate on the ramifications for individuals and society of the socio-technological transformation process of digitalisation. I did so by looking at the effect of digitalisation on work–life balance and whether this also affects social inclusion. Conventional quantitative designs suffer from an unclear definition of the fuzzy concept of digitalisation and a vast number of operationalisations (Gong & Ribiere, 2021). Moreover, measurements of digitalisation are rather new. Taken together, this hinders the use of conventional causal inference methods such as panel data modelling. I addressed this issue by opting for a different research design, namely, a natural experiment. Using a mixed-method process strategy, our research project was able to identify an ideal setting in Germany's healthcare sector (Melchior et al., in press). We identified one highly digitalised hospital as a treatment group and several regular hospitals—part of a church-owned foundation—as a control group.

Using naive estimates and regression-adjusted estimates of the ATE, I found evidence supporting H1a, which stated that the more a workplace is permeated by digitalisation, the easier it is for employees to maximise their work–life balance. Comparing two dependent variables based on different operationalisations of work–life balance, I identified that this was due to the fact that digitalisation allows workers to improve their management of role engagement and role conflict. Furthermore, I found evidence in support of H2, which postulated that the effect of digitalisation on work–life balance is similar across occupations. Using linear regression models, I was unable to find any evidence in support of H3a, which stated that digitalisation increases social inequalities in work–life balance for highly educated knowledge workers with a university degree. However, I found tangible evidence in support of H3b, which stated that digitalisation decreases social inequalities in work–life balance for women. This finding suggests that using networked digital technologies improves female workers' work–life balance, which in turn allows them to better engage in their private lives while still playing an active part in the labour market, thus combatting social exclusion. Overall, these findings demonstrate that digitalisation has positive outcomes for work–life balance and—in line with other research—social inclusion.

5.1. Limitations

The method used in the present study had several shortcomings. First, identifying a suitable treatment group and control group proved to be a rather time-consuming and difficult task—all the more so as the qualitative part, the collection of contextual information, was hindered by the Covid-19 pandemic. At the same time, it was not possible to sufficiently rule out all possible confounders. The possibility of generalizing my findings beyond hospitals and beyond Germany is also limited. However, in the current stage of digitalisation research, designs like this can contribute important puzzle pieces to the debate, especially as they can account for the fuzziness of the concept of digitalisation.

5.2. Conclusions

Increased efforts should be invested in the quantitative research of the individual consequences of digitalisation. I argue that looking at individual factors such as work–life balance is of great importance, as digitalisation is a process that is socially prepared and discursively negotiated, and that ultimately must be individually mastered (Henke et al., 2018). Positive outcomes for workers through digitalisation not only benefit society; the positive social impact is also a prerequisite for and driver of further technological changes (Hirsch-Kreinsen, 2020). It fosters social preparation, influences discursive negotiations, and enables individual mastering. Successful

digital transformation will endure only if it delivers individual benefits.

Despite the above-mentioned limitations, this article contributes in several respects to the ongoing debate on the consequences of digitalisation. Quantitative causal frameworks for researching individual outcomes are still a rarity in German sociological research on digitalisation. The current focus of quantitative research is often on changes in job content or on the bigger picture in labour market research (see, e.g., Henke et al., 2018; Pfeiffer, 2018). I therefore contribute robust empirical evidence to the discussion on the consequences of digitalisation. Although processes such as the blurring or dissolution of boundaries between work and family and increased work stress or density still occur, my evidence shows that technological change can be a positive prospect for work–life balance.

Regarding the prospects of digitalisation for social inclusion, the evinced positive effect for female workers is in line with other theoretical and empirical contributions and suggests that digitalisation might offer indirect pathways to improve social inequalities. Improvements in women's ability to meet their culturally imposed role demands in the family domain free up their time to engage more in other social roles or incentivises their labour market re-entry, thus increasing their social inclusion. With this finding and the finding that digitalisation does not lead to inequalities in work–family balance for highly skilled workers with a university degree, this article contributes to the debate on digitalisation by substantiating the individual benefits of digital transformation. And finally, by demonstrating the positive effects of digitalisation for a case that is currently not the norm (i.e., a workplace with cutting-edge networked digital technologies), I contribute to the debate on the future of work by hinting at the possible fallout for the work–life balance of individuals whose workplaces do not have this level of digitalisation.

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Conflict of Interests

The author declares no conflict of interests.

References

Abendroth, A.-K., & Reimann, M. (2018). Telework and work–family conflict across workplaces: Investigating the implications of work–family-supportive and high-demand workplace cultures. In S. L. Blair & J. Obradović (Eds.), *The work–family interface: Spillover, complications, and challenges* (Vol. 13, pp. 323–348). Emerald Publishing. https://doi.org/10.1108/S1530-353520180000013017

Ahlers, E., Klenner, C., Lott, Y., Maschke, M., Müller, A., Schildmann, C., Voss, D., & Weusthoff, A. (2018). *Genderaspekte der Digitalisierung der Arbeitswelt* [Gender aspects of the digitalisation of the world of work] (Working Paper No. 311). Hans Böckler Foundation. https://www.boeckler.de/pdf/p_arbp_311.pdf

Antoni, C. H., Friedrich, P., Haunschild, A., Josten, M., & Meyer, R. (Eds.). (2013). *Work-Learn-Life-Balance in der Wissensarbeit: Herausforderungen, Erfolgsfaktoren und Gestaltungshilfen für die betriebliche Praxis* [Work–learn–life balance in knowledge work: Challenges, success factors and design aids for operational practice]. Springer.

Baethge-Kinsky, V., Kuhlmann, M., & Tullius, K. (2018). Technik und Arbeit in der Arbeitssoziologie: Konzepte für die Analyse des Zusammenhangs von Digitalisierung und Arbeit [Technology and work in the sociology of work: Concepts for analysing the relationship between digitalisation and work]. *AIS-Studien*, *11*(2), 91–106. https://doi.org/10.21241/SSOAR.64866

Becker, M., & Spöttl, G. (2019). Auswirkungen der Digitalisierung auf die berufliche Bildung am Beispiel der Metall- und Elektroindustrie [The impact of digitalisation on vocational education and training exemplified by the metal and electrical industry]. *Zeitschrift für Erziehungswissenschaft*, *22*(3), 567–592. https://doi.org/10.1007/s11618-019-00869-1

Bjärntoft, S., Hallman, D. M., Mathiassen, S. E., Larsson, J., & Jahncke, H. (2020). Occupational and individual determinants of work–life balance among office workers with flexible work arrangements. *International Journal of Environmental Research and Public Health*, *17*(4), Article 1418. https://doi.org/10.3390/ijerph17041418

Böhle, F., Voß, G. G., & Wachtler, G. (Eds.). (2018). *Handbuch Arbeitssoziologie: Band 2: Akteure und Institutionen* [Sociology of work handbook—Volume 2: Actors and institutions]. Springer.

Bölt, U. (2023). Statistische Krankenhausdaten: Grunddaten der Krankenhäuser 2020 [Statistical hospital data: Basic data of hospitals 2020]. In J. Klauber, J. Wasem, A. Beivers, & C. Mostert (Eds.), *Krankenhaus-Report 2023* [Hospital report 2023] (pp. 353–380). Springer.

Carstensen, T., & Demuth, U. (2020). *Wandel der Geschlechterverhältnisse durch Digitalisierung. Empirische Ergebnisse und Gestaltungsansätze für*

Vereinbarkeit, digitale Sichtbarkeit und den Wandel von Tätigkeiten in der betrieblichen Praxis [Change in gender relations through digitalization. Empirical results and design approaches for work–family reconciliation, digital visibility and the change in activities in operational practice] (Working Paper Forschungsförderung No. 201). Hans Böckler Foundation. https://www.boeckler.de/fpdf/HBS-007935/p_fofoe_WP_201_2020.pdf

Craig, P., Katikireddi, S. V., Leyland, A., & Popham, F. (2017). Natural experiments: An overview of methods, approaches, and contributions to public health intervention research. *Annual Review of Public Health*, *38*(1), 39–56. https://doi.org/10.1146/annurev-publhealth-031816-044327

Dengler, K., Matthes, B., & Paulus, W. (2014). *Occupational tasks in the German labour market. An alternative measurement on the basis of an expert database* (FDZ Method Report 12/2014). FDZ, German Federal Employment Agency, IAB. https://doku.iab.de/fdz/reporte/2014/MR_12-14_EN.pdf

Drobnič, S., & León, M. (2013). Agency freedom for work-life balance in Germany and Spain. In B. Hobson (Ed.), *Worklife balance: The agency and capabilities gap* (pp. 126–150). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199681136.003.0005

Dunning, T. (2012). *Natural experiments in the social sciences: A design-based approach* (1st ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781139084444

Ehrhard, T. (2014). *Personalbedarfsprognose im Gesundheits- und Pflegewesen* [Personnel demand forecasting in the health and care sector]. Peter Lang. https://doi.org/10.3726/978-3-653-04516-1

Eikhof, D. R. (2016). Knowledge work and flexible working: Helping or hindering working women? In M. L. Connerley & J. Wu (Eds.), *Handbook on well-being of working women* (pp. 361–374). Springer. https://doi.org/10.1007/978-94-017-9897-6_21

Fischer, M. (2009). *Das konfessionelle Krankenhaus: Begründung und Gestaltung aus theologischer und unternehmerischer Perspektive* [The faith-based hospital: Justification and design from a theological and entrepreneurial perspective] (1st ed.). LIT.

Fontinha, R., Easton, S., & Van Laar, D. (2019). Overtime and quality of working life in academics and nonacademics: The role of perceived work-life balance. *International Journal of Stress Management*, *26*(2), 173–183. https://doi.org/10.1037/str0000067

Friedrich, T. S., Laible, M.-C., Pollak, R., Schongen, S., Schulz, B., & Vicari, B. (2021). Grasping digitalization in the working world: An example from the German National Educational Panel Study. *Soziale Welt*, *72*(4), 415–452. https://doi.org/10.5771/0038-6073-2021-4-415

Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation*, *102*, Article 102217. https://doi.org/10.1016/j.technovation.2020.102217

Greenhaus, J. H., & ten Brummelhuis, L. L. (2013). Models and frameworks underlying work–life research. In D. Major & R. Burke (Eds.), *Handbook of work–life integration among professionals* (pp. 14–34). Edward Elgar Publishing. https://doi.org/10.4337/9781781009291.00010

Gundlach, J., & Korff, S. (2015). *Datenhandbuch* [Data manual]. Universitätsverlag Hildesheim. https://hilpub.uni-hildesheim.de/server/api/core/bitstreams/18846a0a-581e-40ed-b300-0fe761041042/content

Harteis, C. (Ed.). (2018). *The impact of digitalization in the workplace* (Vol. 21). Springer.

Heisler, D., & Meier, J. (Eds.). (2020). *Digitalisierung am Übergang Schule Beruf* [Digitalization at the interface between school and work]. wbv Media.

Héliot, Y., Gleibs, I. H., Coyle, A., Rousseau, D. M., & Rojon, C. (2020). Religious identity in the workplace: A systematic review, research agenda, and practical implications. *Human Resource Management*, *59*(2), 153–173. https://doi.org/10.1002/hrm.21983

Henke, M., Heßler, M., Krzywdzinski, M., Pfeiffer, S., & Schulz-Schaeffer, I. (2018). *Digitalisierung der Arbeitswelten. Zur Erfassung und Erfassbarkeit einer systemischen Transformation. Kurzfassung des Initiativantrags vom Oktober 2018 zur Einrichtung des Schwerpunktprogramms 2267* [The Digitalisation of working worlds—Conceptualising and capturing a systemic transformation. Executive summary of the proposal of October 2018 to establish the Priority Programme 2267]. German Research Foundation (DFG). https://digitalisierung-der-arbeitswelten.de/files/downloads/SPP-2267-Initiativantrag-kurz.pdf

Hirsch-Kreinsen, H. (2020). *Digitale Transformation der Arbeit: Entwicklungstrends und Gestaltungsansätze* [The digital transformation of work: Development trends and design approaches] (1st ed.). Kohlhammer.

Khallash, S., & Kruse, M. (2012). The future of work and work–life balance 2025. *Futures*, *44*(7), 678–686. https://doi.org/10.1016/j.futures.2012.04.007

King, G., & Nielsen, R. (2019). Why propensity scores should not be used for matching. *Political Analysis*, *27*(4), 435–454. https://doi.org/10.1017/pan.2019.11

Kirpal, S. R. (2011). *Labour-market flexibility and individual careers*. Springer. https://doi.org/10.1007/978-94-007-0234-9

Klauber, J., Wasem, J., Beivers, A., & Mostert, C. (Eds.). (2023). *Krankenhaus-Report 2023: Schwerpunkt: Personal* [Hospital report 2023: Focus: Human resources]. Springer.

König, S., & Cesinger, B. (2015). Gendered work–family conflict in Germany: Do self-employment and flexibility matter? *Work, Employment and Society*, *29*(4), 531–549. https://doi.org/10.1177/0950017014545264

Körber, M., Schmid, K., Drexler, H., & Kiesel, J. (2018). Subjektive Arbeitsbelastung, Arbeitszufriedenheit, Work-Life-Balance von Ärzten und Pflegekräften eines Kommunalklinikums im ländlichen Raum im Vergleich zu einem großstädtischen Universitätsklinikum [Subjective workload, job satisfaction, work–life balance of doctors and nurses at a municipal hospital in a rural area compared with a metropolitan university hospital]. *Das Gesundheitswesen*, *80*(05), 444–452. https://doi.org/10.1055/s-0042-121596

Korunka, C., & Hoonakker, P. (Eds.). (2014). *The impact of ICT on quality of working life*. Springer.

Kurowska, A. (2020). Gendered effects of home-based work on parents' capability to balance work with non-work: Two countries with different models of division of labour compared. *Social Indicators Research*, *151*(2), 405–425. https://doi.org/10.1007/s11205-018-2034-9

Lee, D. J., & Sirgy, J. M. (2019). Work-life balance in the digital workplace. The impact of schedule flexibility and telecommuting on work-life balance and overall life satisfaction. In M. Coetzee (Ed.), *Thriving in digital workspaces: Emerging issues for research and practice* (pp. 355–384). Springer. https://doi.org/10.1007/978-3-030-24463-7_18

Melchior, A., Schongen, S., & Pollak, R. (in press). Mixed method approaches to capture digitalization: The case of networked digital technology permeation in German hospitals. In S. Pfeiffer, M. Nicklich, M. Henke, M. Heßler, M. Krzywdzinski, & I. Schulz-Schaeffer (Eds.), Digitalisierung der Arbeitswelten. Zur Erfassbarkeit einer systemischen Transformation [Digitalisation of working worlds: Capturing a systemic transformation]. Springer Nature.

Michel, J. S., Clark, M. A., & Beiler, A. A. (2013). Work–life conflict and its effects. In D. Major & R. Burke (Eds.), *Handbook of work–life integration among professionals* (pp. 58–76). Edward Elgar Publishing. https://doi.org/10.4337/9781781009291.00012

Minz, R., Grüttner, D., & von Heusinger-Lender, M. (2023). Krankenhaus 2030—Was sich ändern muss [Hospital 2030—What needs to change]. *Gefässchirurgie*, *28*(2), 98–107. https://doi.org/10.1007/s00772-023-00986-6

Mohan, R. (2019). *Die Ökonomisierung des Krankenhauses: Eine Studie über den Wandel pflegerischer Arbeit* [The economisation of hospitals: A study on the transformation of nursing work]. transcript.

Negi, A., & Wooldridge, J. M. (2021). Revisiting regression adjustment in experiments with heterogeneous treatment effects. *Econometric Reviews*, *40*(5), 504–534. https://doi.org/10.1080/07474938.2020.1824732

Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. *Journal of Applied Psychology*, *81*(4), 400–410. https://doi.org/10.1037/0021-9010.81.4.400

OECD. (2019). *Going digital: Shaping policies, improving lives*. OECD Publishing. https://doi.org/10.1787/9789264312012-en

Pfeiffer, S. (2018). Technisierung von Arbeit [The mechanisation of work]. In F. Böhle, G. G. Voß, & G. Wachtler (Eds.), *Handbuch Arbeitssoziologie* [Handbook for the sociology of work] (pp. 321–357). Springer.

Poulose, S., & Sudarsan, N. (2017). Assessing the influence of work-life balance dimensions among nurses in the healthcare sector. *Journal of Management Development*, *36*(3), 427–437. https://doi.org/10.1108/JMD-12-2015-0188

Rahnenführer, K. (2022). Pandemieinitiierte ökonomische und soziale Wandlungsprozesse [Pandemic-initiated economic and social processes of change]. In T. Breyer-Mayländer, C. Zerres, A. Müller, & K. Rahnenführer (Eds.), *Die Corona-Transformation* [The Corona transformation] (pp. 3–20). Springer.

Reichold, H. (Ed.). (2020). Kirchliches Arbeitsrecht auf neuen Wegen: Reformbedarf im Recht der Loyalitätsobliegenheiten und in der Pflege [New departures in church labour law: The need for reform of the law on loyalty obligations and in the care sector]. LIT.

Schier, M., Jurczyk, K., & Szymenderski, P. (2011). Entgrenzung von Arbeit und Familie—mehr als Prekarisierung [Dissolution of the boundary between work and family—More than precarization]. *WSI-Mitteilungen*, *64*(8), 402–408. https://doi.org/10.5771/0342-300X-2011-8-402

Seibt, D., Schaupp, S., & Meyer, U. (2019). Toward an analytical understanding of domination and emancipation in digitalizing Industries. In U. Meyer, S. Schaupp, & D. Seibt (Eds.), *Digitalization in industry* (pp. 1–25). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-28258-5_1

Syrek, C., Bauer-Emmel, C., Antoni, C., & Klusemann, J. (2011). Entwicklung und Validierung der Trierer Kurzskala zur Messung von Work-Life Balance (TKS-WLB) [Development and validation of the Trier Short Scale for Measuring Work–Life Balance (TKS-WLB)]. *Diagnostica*, *57*(3), 134–145. https://doi.org/10.1026/0012-1924/a000044

Tausig, M., & Fenwick, R. (2001). Unbinding time: Alternate work schedules and work-life balance. *Journal of Family and Economic Issues*, *22*(2), 101–119. https://doi.org/10.1023/A:1016626028720

Vargas Llave, O., & Weber, T. (2020). *Regulations to address work–life balance in digital flexible working arrangements*. European Foundation for the Improvement of Living and Working Conditions. https://www.eurofound.europa.eu/en/publications/2019/regulations-address-work-life-balance-digital-flexible-working-arrangements

Voß, G. G. (1998). *Die Entgrenzung von Arbeit und Arbeitskraft: Eine subjektorientierte Interpretation des Wandels der Arbeit* [The dissolution of the boundary between work and worker: A subject-oriented

interpretation of the transformation of work] (Mitteilungen aus der Arbeitsmarkt- und Berufsforschung No. 31). IAB. https://doku.iab.de/mittab/1998/1998_3_MittAB_Voss.pdf

Yates, C. A. B., & Leach, B. (2006). Why 'good' jobs lead to social exclusion. *Economic and Industrial Democracy*, *27*(3), 341–368. https://doi.org/10.1177/0143831X06065960

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