

RESEARCH ARTICLE

Values and commitment in the innovation process in highly regulated and semi-public systems: The case of the four-day work week in German healthcare

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Abstract

This study examines the role of normative values and stakeholder commitment in the evaluation and implementation process of social and organizational innovations in highly regulated systems, using the example of the four-day work week in German healthcare. Based on 26 expert interviews across micro, meso, and macro levels, the study reveals how actor-specific values and institutional contexts shape judgment about ecological, economic, social, and organizational performance sustainability. The findings show that commitment to innovation is not determined solely by functional considerations but emerges in a field of tension between normative aspirations. Stakeholders align themselves differently along axes such as employee vs. patient orientation or short- vs. long-term thinking, resulting in competing innovation scenarios. The study proposes a transferable framework enabling organizations to map stakeholder values, locate areas of tension, and assess the depth and direction of commitment.

Keywords: organizational change; sustainability; sociology of organizations; values; healthcare

Introduction

Reforms and innovations are needed in the German healthcare system to ensure adequate medical and nursing care. These include structural reforms in outpatient and inpatient care, as well as technological, social, and organizational innovations. Despite the high added value of social and organizational innovations, innovations often do not diffuse and remain below their potential (Helmold, 2021). In the healthcare system, the development and dissemination of innovations also face the challenge of the special structures of the system (e.g., 24/7 care in care facilities and shift work) and the high level of regulation (Kosiol, Silvester, Cooper, Alford & Fraser, 2024). The question therefore arises as to how innovations in healthcare can succeed and improve sustainability.

The four-day work week (4DW) with reduced working hours and full wage compensation has the potential to be both a social and organizational innovation within healthcare facilities. Existing studies on the introduction of the 4DW from other sectors point to improvements in productivity, job satisfaction, employee retention, overall health, and a reduction in sick leave (e.g., Coote, Harper & Stirling, 2021; Schorr et al., 2022). However, previous models have mostly been tested in care facilities without reducing total working hours, rather, weekly working hours were compressed into four working days (Jost & van Gellekom, 2023). So far, there is little research on the potential and feasibility of a 4DW with reduced working hours in the healthcare sector. Although the 4DW promises

social sustainability as a social and organizational innovation, its introduction often fails due to institutional constraints and normative conflicts of interest. This tension is the starting point for this study. Therefore, this paper addresses the following research questions:

RQ1: In what ways can a 4DW be considered as a social and organizational innovation that contributes to greater sustainability in healthcare?

RQ2: What criteria do decision-makers at the macro, meso, and micro levels of the healthcare sector use to assess the feasibility and success of the 4DW?

To answer these questions, 26 expert interviews were conducted in 2024 and 2025 with representatives from stakeholder groups in the healthcare sector. These include nurses, directors of nursing, union representatives, politicians, a representative of the nursing chamber, and representatives of health insurance funds. The interviews were analyzed using qualitative content analysis (Mayring, 2022).

Challenges in the healthcare system

The German healthcare sector, like many other Western healthcare systems, is facing several major challenges. These include the chronic underfunding of care facilities, increasing economization (Marckmann, 2021), a shortage of skilled workers, and high workloads (Wilkesmann, 2023). These challenges are interdependent and mutually reinforcing. Hospitals cover their running costs through a system of lump-sum payments based on Diagnosis-Related Groups (DRGs). Investments are supposed to be funded by the federal states, but over recent decades, many states have failed to meet these obligations (Marckmann, 2021). As a result, hospitals have tried to compensate for the investment gap by focusing on more profitable procedures. This has led to increased workloads for hospital staff, a rise in the number of operations, and an overall increase in healthcare costs. In contrast to physicians, nursing personnel in Germany are less driven by economic decision-making, as their work is refinanced through health insurance providers. Nurses are, therefore, embedded in a financing system that is less focused on profitability but still affected by systemic underfunding (Wilkesmann, 2023).

Both the medical and nursing sectors in Germany are experiencing a severe shortage of skilled workers, which increasingly threatens the provision of care. Demographic aging is leading to a higher demand for medical and nursing care, while at the same time reducing the number of people available to work, which leads to intensifying these problems (Klauber, Wasem, Beivers, Mostert & Scheller-Kreinsen, 2024). As of 2024, there is already a shortage of approximately 110,000 nurses for around 1.94 million people in need of care. Projections indicate that by 2034, an additional 230,000 people will require medical and nursing care, increasing the demand from 1.67 million nursing staff in 2024 to 1.74 million in 2034. By that time, a shortage of around 260,000 full-time nursing professionals is expected (Statistisches Bundesamt, 2025). In the coming years, rising costs and an increasing need for skilled workers are expected.

Statistics for Germany as a whole are not available. In North Rhine-Westphalia in Germany, nurses often leave the profession after only 18 years, while geriatric nurses leave after just 13 years (Isfort, 2022). Additionally, a large proportion of nursing staff work part-time. The high rates of part-time work and early career exits can be partly attributed to the intense workload. These burdens include physical demands (e.g., manual labor, insufficient ergonomic support), psychological stress (e.g., dealing with suffering, illness, and death), organizational pressures (e.g., shift work, 24/7 availability, staff shortages, unreliable scheduling), and social strain (e.g., rigid hierarchies). According to a 2022 study, more than 863,000 trained nurses are currently not working in the profession, and over 223,000 are employed part-time. Among those who have left the profession, 88.2% expressed willingness to return if working conditions improved. Similarly, about 70% of part-time nurses would consider increasing

their working hours under better conditions (Auffenberg et al., 2022). These findings indicate a significant untapped potential to mitigate the nursing shortage and strengthen the quality of care in the German healthcare system. This sector is under significant pressure and in need of innovation.

Theoretical framework

Social and organizational innovations

Social and organizational innovations are key components of the modern world of work, as they open up new ways of working. The concept was first introduced in an academic context in the 20th century by the economist Joseph Schumpeter (Schumpeter, 1947). According to Schumpeter (1947, p. 151), innovation is 'the doing of things that are already being done in a new way'. Development, in his view, occurs through the recombination of production factors or the creation of new social practices by entrepreneurs, which replace existing practices and enterprises. Schumpeter (1947, p. 151) referred to this process as 'creative destruction'.

The distinction between social and technical innovations was first made by Ogburn and Fielding (1922), who described social innovations as part of social change. In the German-speaking academic context, Zapf (1989) became known for his work on social innovation toward the end of the 20th century. He defined social innovations as a subset of social change that, through new practices, aims to solve social problems more effectively than was possible with previous approaches. Howaldt and Schwarz (2010) offer a more specific definition of social innovation, which is 'a purposeful, goal-oriented reconfiguration of social practices initiated by certain actors or constellations of actors within specific action fields or social contexts, with the aim of solving or satisfying social needs more effectively than established practices allow' (Howaldt & Schwarz, 2010, p. 89).

In the context of social innovation, the term 'new' is not understood as absolutely new but as relatively new within a given field (Howaldt & Schwarz, 2010). Often, social innovations involve a reconfiguration of existing practices rather than entirely novel ones (Domanski, Howaldt & Kaletka, 2020). The term 'social' is not interpreted normatively. It does not necessarily imply that the innovation is socially desirable. Conversely, social innovations and their consequences may be perceived in a contradictory manner and change over time. Their impact and evaluation can vary depending on the actors involved (Mulgan, 2006). 'Social' refers primarily to the immaterial nature of the innovation (Howaldt & Schwarz, 2010).

Values and the institutional context

Innovations and their institutionalization procedure are shaped by agents, structures, and institutions (Pue, Vandergeest & Breznitz, 2016). As Marx (1852, p. 5) put it, 'Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past.' This implies that social (and also technical) innovations are intentional, yet still products of their time. Social innovations arise from, and are shaped by, their institutional context (Schwarz, Birke & Beerheide, 2010). In this sense, innovations are outcomes of broader societal developments.

The question of how innovative ideas arise from different actors can be explained by the Quintuple Helix model (Carayannis & Campbell, 2021; Galvao, Mascarenhas, Marques, Ferreira & Ratten, 2019). It was developed based on the triple helix (where innovation arises from collaboration between government, business, and academia) and the quadruple helix (where the influence of civil society on innovation was added). The Quintuple Helix adds the natural environment as a fifth dimension and additional subsystem, whereby the environment is considered not only as an object (conditions, resources, prerequisites) but also as a subject (ecological sustainability as a goal). The collaboration between the systems targets the development of sustainable, socially embedded, and ecological innovations. Building on this, Carayannis and Campbell (2021) emphasize the impact of both democracy and the environment on the sustainability of innovations. It is evident that innovations are not solely

driven by the market economy but also dependent on their ecological and social embeddedness. In this context, sustainability can be extended to ecological, economic, and social sustainability. In highly regulated and public systems, like in the case of hospitals, the environment plays a special role in the idea, evaluation, and implementation process of innovation. Due to public funding, innovations must be democratically accepted. The state can indirectly influence innovations through laws and regulations, both in the idea process and in adaptation and implementation.

Social innovations pursue normative goals such as sustainability. They are essential for addressing major societal challenges, including ecological, economic, and social sustainability. Grand societal challenges are cross-border and cross-sector problems. The European Union identified key societal challenges in 2019, including health, demographic change, and resource efficiency (European Commission, 2019). For a long time, technical innovations were considered the primary drivers for solving these challenges. However, the importance of social innovations for societal development is becoming more prevalent among policymakers, businesses, and civil society (Lipnik & Lipnik, 2020, p. 52). Public institutions are increasingly expected not only to operate efficiently but also to communicate and uphold normative values for the benefit of citizens. They are viewed as key interfaces between politics and the public, tasked with promoting and realizing democratic goals. Public Value Theory (Bozeman, 2002; Cluley, Parker & Radnor, 2023; Talbot, 2009) emphasizes values such as justice, participation, legitimacy, and sustainability. Accordingly, organizations generate public value when they contribute to achieving shared societal objectives (Bryson, Crosby & Bloomberg, 2014).

Adaption and implementation process of social and organizational innovations

Organizational innovations are a subcategory of social and sustainable innovations. They involve a reconfiguration of working habits, operational systems, and organizational structures, while offering benefits for both the organization and its employees (OECD, 2005). Organizational innovations often carry significant risks despite their potential, as they frequently require substantial investments and their outcomes are uncertain (Helmold, 2021). The effect of organizational innovations can be measured through indicators such as company performance, job satisfaction, employee motivation, or autonomy (Nord & Costigan, 1973).

The innovation is first and foremost intended to address the challenge that it is designed to respond to. The problem can be at the micro, meso, or macro level, and these levels can be interdependent. An invention is created by one or more inventors (micro level) (Domanski et al., 2020). They spread at the micro and meso levels until they become established at the macro level. Even when adaptation takes place within an organization, it is still considered to be at the micro level, as an organization's key individuals are responsible for adaptation and decision making. At this point, the adapter's motivation and evaluation of the invention are particularly crucial. The group of adopters was long overlooked in research on the diffusion of social innovations. It is increasingly evident that adopters, along with their values, norms, and the institutional structures they are embedded in, play a central role in shaping the implementation process and impact of social innovations. A closer examination of their perspective and the local context can help explain why some social innovations do not spread despite their potential benefits (Domanski et al., 2020). Thus, not only instrumental factors, such as relative advantage, compatibility, and complexity, are important for adopters, but also, according to a study by Dietrich et al. (2016), symbolic factors (e.g., perceived competence, warmth, and openness of the innovation), emotions (e.g., optimism vs. threat), and motivation (e.g., intrinsic vs. extrinsic). It is therefore reasonable to consider ethics-related variables at the initial phase of the development of a new innovation (Brusoni & Vaccaro, 2017).

In a systematic review of the adaptation and diffusion of innovations in service organizations, Greenhalgh et al. (2004) identify key contextual factors that favor or block adaptation. These include, among others, readiness for change, leadership and vision, organizational slack (time and financial leeway), and fit with existing values and workflows. Vagnani, Gatti and Proietti (2019) examined

a model to explain the adoption of innovations by organizations. The four central model components are the attributes of innovations (e.g., perceived utility, compatibility), behavioral preferences of decision makers (e.g., attitude, perceived social pressure), and the resources of organizations (e.g., availability of material and human resources). Depending on the time of adoption, certain variables have a stronger or weaker effect. For example, in the case of early adoption, the adopters are more strongly motivated by the evaluation of the innovation.

Organizational and individual decision makers are responsible for whether organizational innovations are adopted by the organization. Organizational decision makers are influenced by subjective norms, attitudes of advisory networks outside the organization, colleagues, and the degree of heterogeneity in the environment. Individual decision makers influence whether innovations are applied in business practice at the micro level. However, this is only possible for certain innovations that are optional in day-to-day business. Nevertheless, they are also important for non-optional innovations in that they influence organizational decision makers in their role as colleagues (Fu, Shumate & Contractor, 2020). Because the healthcare system is highly regulated (Blümel, Spranger, Spranger, Achstetter, Maresso & Busse, 2020), it makes sense to also consider the influence of politicians, health insurance companies and other institutions, which will be referred to as policy decision makers at the macro level.

According to Sung et al. (2011), four agents play a central role in the implementation process of organizational innovations (meso level): top management, external environment, innovation, and employees. Research on leadership and the use of resources (e.g., organizational ambidexterity) is particularly relevant here. Oeij et al. (2019) show that social innovations follow multiple context-dependent adoption and implementation paths. They identify seven factors that influence the success of the adaptation and implementation process. These include stakeholder commitment, financial/political support, overcoming setbacks, achieving consensus among stakeholders, availability of funds, leadership, and infrastructure. Social-innovative change does not follow a linear plan but can rather be understood as an innovation journey. The successful navigation of this journey requires a high degree of situational maneuvering. In particular, institutional embedding and the development of resilient infrastructures are crucial for achieving sustainable impact and system change (Oeij et al., 2019).

In the organizational context, a distinction can be made between the innovation (e.g., what is being adapted?) and the implementation process (e.g., how can an innovation be successfully introduced?). Organizational ambidexterity means that organizations must operate flexibly and efficiently at the same time. Resources are caught between exploration (e.g., trying out new ideas to drive innovation) and exploitation (e.g., maximizing existing resources and increasing efficiency) (Chakma & Dhir, 2024). According to Lee, Seo, Jeung and Kim (2019), establishing an ambidextrous organizational culture that enables both exploratory and exploitative processes is key to improving organizational performance sustainably. In this sense, the 4DW could reinforce exploratory processes, provided that it remains compatible with existing routines.

These perspectives show that the adaptation, implementation, and evaluation of innovations is a field of tension between normative objectives, pragmatic feasibility, institutional structures, and actor perspectives, especially in highly stressed sectors such as healthcare. Building on this foundation, the 4DW is an example of how social and organizational innovations reflect the principles of public value theory. The focus of this paper is on the adaptation and implementation process of organizational innovations. The study examines the extent to which organizational, individual, and policy decision makers decide for or against organizational innovations and which evaluation criteria are used to assess the 4DW as a social and organizational innovation.

The four-day work week as a social and organizational innovation

Empirical findings suggest that a 4DW with reduced working hours holds potential as both a social and organizational innovation. The concept of a 4DW both with and without a reduction in

working hours is not entirely new. In the 1970s and 1980s, companies in the United States experimented with compressed 4DWs (Friedrichs, 1973). In the 1990s, France introduced a 35-hur week aimed at reducing unemployment (Lepinteur, 2019). During the year 2010, Iceland conducted a large-scale pilot of a 4DW with reduced working hours. One percent of the national population participated in the trials, which yielded positive results: only a few companies had to hire additional staff, while employee job satisfaction and perceived health significantly improved (Haraldsson & Kellam, 2021).

Since the end of the COVID-19 pandemic, interest in and public debate about the 4DW has intensified, especially around models in which employees work 32 hours over four days without a loss of pay. The non-profit organization Four-Day Week Global (4DWG) launched the first internationally coordinated pilot study. Over a 6-month period, companies across the United States, Canada, Ireland, Australia, New Zealand, and the United Kingdom tested the model. The results showed reductions in absenteeism and improvements in productivity, job satisfaction, work motivation, physical and mental health, and work-life balance (Schorr et al., 2022).

In 2024, 4DWG also launched a pilot project in Germany involving 50 companies testing a 4DW with reduced working hours and full wage compensation. The project is currently ongoing and is being scientifically monitored by the University of Münster (Backmann, Hoch, Hüby, Platz & Sinnemann, 2024). Furthermore, the 4DW continues to be a subject of public and political debate in Germany. For example, the trade unions IG Metall and the Union of German Train Drivers (Gewerkschaft Deutscher Lokomotivführer, GDL) have long advocated for reduced working hours with full pay (Hammermann & Schäfer, 2023).

Despite its potential, the 4DW whether compressed or with a reduction in total working hours, faces several barriers and risks. Critics of the compressed week argue that workload intensification on fewer days could negatively impact both employee health and productivity (Hammermann & Schäfer, 2023). Concerns surrounding the reduced-hours model include potential losses in productivity (Bühren, Meier-Hahavili, Meier & Kalchthaler, 2023), an aggravation of the skilled labor shortage (Gerold, Soder & Schwendinger, 2017), and risks of broader economic decline (Schäfer, 2023). A broader critique points to the limited research available on reduced-hours 4DWs. Most existing studies have focused on compressed week models, meaning the results are not easily transferable (Zander, 2023). Moreover, the debate around reduced working time largely centers on occupational groups and sectors without shift work, leaving out large parts of the healthcare sector.

However, great potential for a company and its employees is perceived at the organizational level, there is potential for both the company and its employees (meso level). For the 4DW to be considered a social innovation, it must be (1) widespread and accepted in the healthcare sector and (2) solve existing problems in a new way. As a social innovation, it could contribute at the macro level to improving public well-being and health, facilitating a better work-life balance, and thereby promoting gender equality. When viewed as a driver of social change, the 4DW can be understood within the framework of the New Work concept (Bergmann, 2004) as a catalyst for a shift in how work and consumption are perceived. According to Bergmann's philosophy of work, labor should serve the individual, not the other way around. To realize this vision, people should ideally divide their time equally into three parts: one-third for gainful employment, one-third for highly efficient self-sufficiency, and one-third for activities they genuinely enjoy. Bergmann assumes that such a model would lead to lower consumption and greater self-sufficiency, contributing to greater economic and ecological sustainability on a societal level.

However, the extent to which a compressed 4DW can be considered a social innovation is debatable. Since it simply redistributes existing working hours, any additional free time is often the result of reduced commuting rather than real-time relief. Existing studies (Golden, 2010; Ronen & Primps, 1981) suggest that such compressed models have limited positive social and societal effects. Recent studies (Backmann et al., 2024; Coote et al., 2021; Haraldsson & Kellam, 2021; Kelly, Fan, Bezdenzhnykh & Bridson-Hubbard, 2022; Lepinteur, 2019; Lewis, Stronge, Kellam & Kikuchi, 2023;

Schorr et al., 2022) indicate that a 4DW with reduced working hours can also be classified as an organizational innovation. This is essential if the model is to be diffused and ultimately function as a social innovation. With reduced working hours, it is still possible for organizations to maintain the same level of output. This can be achieved, on the one hand, through digital support systems, restructuring, and reviews of task efficiency, and on the other hand, through the positive effects of reduced working hours, such as improved job satisfaction and motivation, which can enhance performance, increase employee retention, and reduce absenteeism. However, only a few organizations that operate with shift work or provide 24/7 services have tested reduced working hours with full wage compensation. This paper focus on the four-day workweek with full pay and a reduction in working hours, because a redistribution of working hours (compressed 4DW) is not necessarily an innovation by definition, and previous results do not indicate a consistent reduction in the workload.

Considering the existing challenges, a 4DW with reduced working hours may initially appear counterintuitive as a social and organizational innovation in the healthcare sector. However, when viewed through the lens of empirical findings, the model demonstrates long-term potential, particularly with regard to improving employee well-being and alleviating the shortage of skilled workers. The following section explores how stakeholders in the healthcare sector perceive this potential and the ways in which their assessments and implementation perspectives are shaped by specific values and normative frameworks.

Methodology

To address the research questions, a qualitative research design was chosen in order to explore the perceived potential and evaluation criteria used by healthcare stakeholders on micro, meso, and macro levels. A total of 26 semi-structured expert interviews were conducted between August 2024 and February 2025. Interviewees included nurses, physicians, nursing managers, union representatives, a delegate from the nursing chamber, the CEO of a healthcare provider, representatives of health insurance funds, and members of both federal and state parliaments involved in healthcare policy (see Table 1). In this context, stakeholders serve two key roles. First, they are either directly impacted by the challenges or positioned to address them. At the micro level, nursing staff and doctors experience these challenges firsthand. At the meso level, nursing managers face these issues and can respond to them. CEOs and nursing managers primarily hold decision-making authority to tackle these challenges at the meso level, while trade unions and politicians primarily hold this authority at the macro level. Second, these same stakeholders assess how well adaptation and implementation processes unfold, drawing on their direct involvement and expertise.

The aim was to reflect a wide range of perspectives across the micro, meso, and macro levels of the healthcare system, integrating both experiential and expert knowledge related to healthcare-specific challenges and organizational practices in medical and nursing care settings. While the sample represents a variety of professions, other limitations regarding diversity must be explained: participants at the meso and macro levels are predominantly male and between the ages of approximately 40 and 60. This was particularly evident among nursing managers. The politicians interviewed belonged to Christian Democratic, Social Democratic, and ecologically oriented parties. The politicians interviewed play a key role in shaping health policy at the state level, which is why politicians from other parties were not included. Due to the fact that healthcare is predominantly organized on a state-specific basis, the majority of the sample comes from North Rhine-Westphalia, although nationwide perspectives were also obtained. Nursing managers were recruited from public, church, and private care facilities. Although the interviews primarily focused on a 4DW with reduced working hours for nursing staff, other working time models and professional groups were also discussed. The interviews ranged from 45 minutes to 1 hour and 49 minutes in length. All interviews were transcribed and analyzed using MAXQDA software, based on qualitative content analysis according to Mayring (2022). The coding framework was developed through a combination of deductive and inductive category formation (Mayring, 2022). Following Carayannis and Campbell (2021), the opportunities

Table 1. Interviewee details

Level	Interviewee	Gender
Macro level (policy decision makers)	State Parliament Member with a Focus on Health and Social Policy 01	Male
	State Parliament Member with a Focus on Health and Social Policy 02	Male
	State Parliament Member with a Focus on Health and Social Policy 03	Male
	State Parliament Member with a Focus on Health and Social Policy 04	Female
	State Parliament Member with a Focus on Health and Social Policy 05	Female
	Federal Parliament Member with a Focus on Health and Social Policy	Male
	Representative of Nursing Chamber	Female
	Trade Union Secretary 01	Male
	Trade Union Secretary 02	Male
	Trade Union Secretary with a Focus on Youth Issues	Male
	Policy Officer for Nursing Policy, Health Insurance Provider	Male
	Representative of a Health Insurance Provider	Male
Meso level (organizational decision makers)	Director of Nursing 01	Male
	Director of Nursing 02	Female
	Director of Nursing 03	Male
	Director of Nursing 04; Head of Nursing Services	Male; female
	Nursing Expert from a Non-profit Provider Organization	Male
(individual decision makers)	Chairperson of a Regional District Association of a Non-profit Provider	Male
	Staff Council Representative and Physiotherapist	Male
	Staff Council Representative and Physician 01	Male
	Staff Council Representative and Physician 02	Male
	Chief Physician	Male
Micro level (individual decision makers)	Nurse and Youth/Apprentice Representative in the Staff Council	Female
	Nurse 02	Female
	Nurse 03	Male
	Nurse 04	Female

and risks were categorized deductively according to ecological, economic, and social sustainability at the macro, meso, and micro levels. Since healthcare is a semi-public and strictly regulated system and the institutional context is of great importance, deductive regulatory rules (administrative and legal aspects) were added as a category (Blümel et al., 2020). During the analysis, it became clear that the categories needed to be supplemented with organizational performance sustainability, as interview participants repeatedly mentioned how the four-day week could enable hospitals to improve the health and well-being of their employees and increase employee retention. The following graphic (Figure 1) describes the methodological approach.

Results

All interview participants were familiar with the concept of the 4DW, although both models with and without a reduction in working hours were discussed. Both versions were assessed ambivalently,

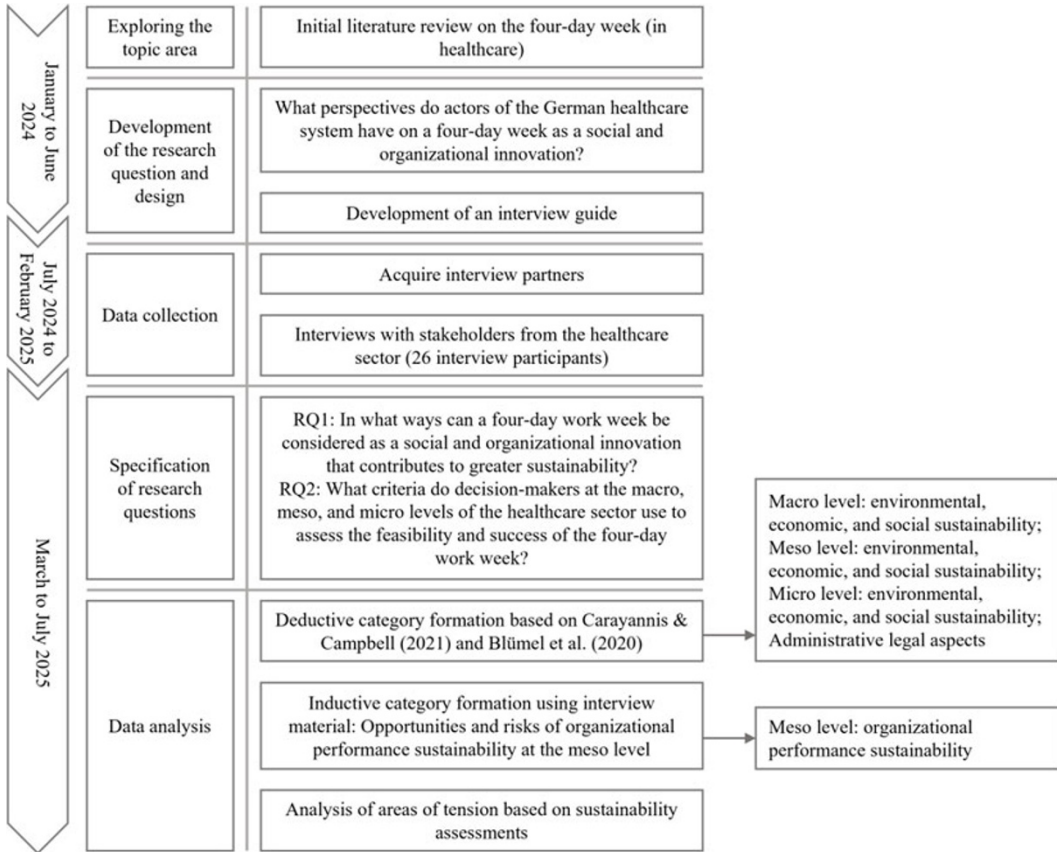


Figure 1. Research design and timeline.

with opinions ranging from enthusiasm to skepticism. The extent to which a 4DW can achieve normative goals of social and organizational innovation is evaluated in the following. In this context, sustainability is understood as a normative goal and the study distinguish between ecological, economic, social and organizational performance sustainability.

Ecological and economic sustainability

Ecological sustainability was not explicitly addressed by the interviewees. It was discussed that positive effects would be fewer commutes, but that employees would have more time to consume. Overall, however, the impact was considered to be low. In principle, ecological effects can only be located at the macro level. Economic sustainability as an aim can be achieved on all levels. At the micro level, the interviewees rate the effects as very low to nonexistent. At the meso level, there are positive and negative effects assumed. Rising costs are not sustainable for hospitals and must be refinanced. Furthermore, there is a risk that the reduction in weekly working hours will lead to a shortage of staff, particularly in the short-term, and that wards will have to be closed at the beginning as a result. This would have enormous negative economic consequences for the hospital. In another scenario, which is advocated in particular by trade union representatives, politicians, and nursing staff, there would be little to no economic impact or maybe a positive impact on the hospital and the healthcare system due to increased social (e.g., staying in the profession longer) and organizational performance

sustainability (e.g., fewer sick days), which could compensate for the reduction in working hours and increased personnel costs.

The interviewees are ambivalent about economic sustainability at the macro level, as the following quotes show:

I can imagine that overall health stability would increase as well. That means fewer doctor visits, fewer hospital stays, fewer surgeries, and similar things. Another important point is early retirement, which we haven't talked about at all yet. When people leave their profession due to incapacity for work or occupational disability, it has massive macroeconomic effects. We are now paying billions in incapacity and disability pensions. All of that could be minimized, which in turn would lead to economic relief. (State Parliament Member with a Focus on Health and Social Policy 03)

But economically speaking, it means: you need more staff, and that has to be financed. [...] You'd have to think about how that could be refinanced – for example, through a different reimbursement of nursing DRGs or an adjustment of the nursing education levy. In the end, all insured people pay for it. And that must be clear to everyone: every service in the healthcare system is funded by everyone. (Policy Officer for Nursing Policy, Health Insurance Provider)

While on the one hand, economic relief is expected at the macro level (such as reduced pension contributions due to higher labor force participation, a healthier population, and an increase in volunteer work), interviewees were divided on whether a 4DW (for nurses or all employees) would be financially viable for the federal government. A few interviewees (politicians, nursing directors) assume a scenario in which a 4DW requires 20% more staff and the personnel costs for the healthcare system increase accordingly by around 20%. In this scenario, economic sustainability is assessed negatively. Furthermore, it must be possible for hospitals to pass on their costs or refinance the increased personnel costs through insurance contributions or taxes.

Social sustainability

The possibility of improving social sustainability through a reduced 4DW in the healthcare sector was rated particularly high on the macro level. Reduced working hours could alleviate workloads, leading to greater job satisfaction, improved health, and a longer duration of employment in the profession. In particular, nurses who currently work part-time due to high work-related stress might increase their hours, which could help reduce the risk of poverty in old age (micro level). As women make up the majority of the nursing workforce, often hold part-time positions, and bear the main responsibility for unpaid care work, the model was seen as having the potential to reduce structural gender inequalities. A single-parent caregiver reports:

I've been working night shifts for 17 years now, I think, since the children were born and were small, because I say I have to be here during the day and then I sleep for a few hours in the morning at most. [...] And then, of course, it's also very difficult because, as is the case at our hospital, for example, there is no daycare center. [...] And then shift work can be tough sometimes. [...] Children need to eat and have hobbies. And I don't need to tell you that everything is getting more expensive for everyone, everywhere. [...] I can't do it full-time. But of course, you have to make it work financially. (Nurse 04)

Given the high workload, shift work, and 24/7 availability required of healthcare professionals, a reduction in working hours would increase perceived fairness compared to occupations with lower physical and emotional demands and standard 9-to-5 schedules. This effect can be observed at both the micro and macro level.

One facet of social sustainability is ensuring patient care. Social sustainability means that all people have access to medical care. This is the most important evaluation criterion cited at both the macro and meso levels:

Nurses must not break under the strain, that's clear. But at the same time, we have to ensure that society continues to be cared for. The well-being of patients is the top priority. The relief of nursing staff must not come at the expense of patient care. (State Parliament Member with a Focus on Health and Social Policy 02)

Nursing staff are already reporting that they are unable to provide patient care in line with their own expectations:

Half of the ward is currently isolated with influenza. [...] This involves so much work and takes so much time that many things are left undone. Or are done incorrectly. Everything has to be done quickly. Tablets are administered incorrectly. [...] That's no fun. [...] You always feel like you have to be rescuing people. (Nurse 04)

If many healthcare facilities were to implement a 4DW simultaneously, the short-term shortage of skilled workers would likely worsen, and the continuity of care could no longer be guaranteed. At the meso level, such a shift could lead to increased staffing shortages, the closure of wards, and revenue losses for hospitals.

Public acceptance also plays a role in terms of social sustainability. Since the healthcare system is funded through taxes and health insurance contributions, such measures would require broad societal support. While there is a general awareness of the high demands and burdens placed on medical and nursing staff, interviewees were divided on whether the public would support the increased personnel costs that a 4DW implies. The interviewees at the meso and macro levels assume a 20% wage increase, which could not be covered by pension funds and for which there is no political and social will to pay for it through tax revenues or health insurance contributions.

I think acceptance would be high – up to the point where it comes to paying. [...] But we saw during the coronavirus crisis that not much happened beyond people clapping on the balconies. As soon as it came to putting more money into the system, expanding funding or raising wages, people were no longer so willing. (State Parliament Member with a Focus on Health and Social Policy 03)

For the interview participants, fairness is an important aspect in the evaluation of implementation. In addition to the necessity of a 4DW for all professional groups, all care facilities would have to have a 4DW so that hospitals would not have a competitive advantage:

If those hospitals that introduce it and those that do not trigger a suction effect, so that the hospitals that persistently stick to the five-and-a-half-day week suffer considerable migration. [...] Otherwise, it would lead to a shift and people would say, "Why should I stay here when I can work elsewhere with a 4DW?" (State Parliament Member with a Focus on Health and Social Policy 03)

At the meso level, a 4DW could only be truly fair if all employees across all professional groups within hospitals have a 4DW:

Everyone, absolutely everyone. Not just nurses and doctors, but also the technicians, reception staff, administrative workers, and everyone else. If a measure like this is introduced, everyone must benefit. It could be rolled out step by step, starting with nursing. (Trade Union Secretary 02)

For the interviewees, the 4DW promotes social sustainability at an individual level, as employees' health can be improved through reduced workloads. This reduces job-related disadvantages compared to other professions, which many nursing staff experience.

Organizational performance sustainability

Organizational performance sustainability was developed inductively as a form of sustainability in the analysis of the interviews. It describes the goal of providing good working conditions for employees so that they can work in a healthy, motivated, and satisfied manner. At the same time, the needs of employees should be in line with the interests of the company and thus increase the company's resilience. Organizational performance sustainability takes place at the meso level but also influences other forms of sustainability.

One of the most important criteria mentioned, particularly when assessing the potential benefits, is the well-being and health of employees. This was a point of strong agreement among all interviewees in favor of the 4DW:

I honestly think that care professions are very poorly paid overall, and it's becoming increasingly difficult to attract people to these jobs. When I see how much personal commitment is required – how exhausting this work is, with such high levels of physical and psychological stress – then we really need to think about how we can make these jobs more attractive. (Representative of a Health Insurance Provider)

I could imagine that being quite pleasant. And I believe that if people have a little more free time and find relief in it, sick leave will also be reduced somewhat. Because often there is understaffing, which results in people either being fed up, to put it bluntly, or simply not being able to cope anymore and reaching their limit, which then leads to another wave of illness. (Nurse 03)

The interview participants believed that a 4DW could increase the resilience of the system because it could reduce stress, burnout, and fatigue among employees (micro level), thus potentially extending the duration of their professional careers. In addition, it may encourage former nurses to return to the profession. Overall, this could contribute to mitigating the long-term shortage of nursing staff (meso level). However, the interviewees noticed an intensified shortage of nursing personnel in the short term and believed it could continue in the long term.

Moreover, the introduction of a 4DW offers an opportunity to reorganize work processes. This could enhance the resilience of healthcare institutions by improving their capacity to respond effectively to crises (meso level). At the same time, interviewees agreed that the healthcare system is not currently equipped to handle a sudden, widespread implementation of a 4DW while also ensuring patient care.

Administrative and legal aspects

The 4DW is assessed differently in terms of sustainability aspects. Nevertheless, administrative and legal hurdles occurred as the biggest hurdle. The refinancing of nursing staff was seen as a challenge: health insurance companies were not prepared to pay higher hourly wages that were not covered by the collective agreement.

In addition, financing issues are, of course, also a major problem – for everyone. Costs are rising, but we cannot negotiate our prices ourselves; instead, we are bound by political conditions. (Representative of Nursing Chamber)

Therefore, an adapted collective agreement is necessary to make a 4DW legally secure. Depending on the interest group, the criteria are weighted differently. Nurses and doctors, in particular, consider the health and well-being of employees to be an important criterion. Stakeholders at the meso level evaluate the implementation possibilities, particularly in terms of legal and administrative aspects as well as financing. At the macro level, implementation options are also assessed in terms of financing and public acceptance. Ensuring patient care is a high priority for all interview participants. Overall, the main barriers to the sustainability of the 4DW are administrative and legal aspects.

Summary of empirical findings

The results show that a 4DW as a social and organizational innovation has the potential to strengthen the economic, social, and organizational performance sustainability of the healthcare system, even if the results are ambivalent. Clearly, interview participants view the 4DW from different perspectives, focusing on the micro, meso, or macro level and using different scenarios. The following Table 2 shows the opportunities and risks for economic, social, and organizational performance sustainability, broken down into micro, meso, and macro levels. Ecological sustainability was not included in the table due to its lack of empirical significance.

A distinction can be made between two main scenarios: conservative interview participants assume that a 4DW will lead to a 20% reduction in available manpower and thus to 20% higher personnel costs (nursing directors, politicians, employees in management positions). Left-wing politicians and trade unions support the 4DW because they believe in its benefits. They emphasize the positive effects of the 4DW, such as improved health and fewer sick days. They believe that costs will remain the same and the shortage of skilled workers will decrease, which is why they are positive about the 4DW. Nursing staff assume that the reduction in working hours will relieve them enormously. They discuss economic sustainability less and are of the opinion that a reduction is unavoidable due to the current workload.

Discussion

The findings of this study confirm the key assumptions from the literature on social and organizational innovation. As previous research suggests, social innovations do not emerge in isolation but are embedded in institutional, normative, and organizational structures (Domanski et al., 2020; Howaldt & Schwarz, 2010). In highly regulated sectors, innovations like the 4DW with reduced hours are not adopted solely based on technical feasibility. Instead, adoption depends on actor-specific values, practical constraints, and institutional frameworks. In this context, the introduction of the 4DW represents more than just a working time reform. It touches on core normative questions around fairness, sustainability, and employee well-being – values that are particularly relevant in professions centered around care and responsibility. As Berger and Luckmann (2021) have argued, institutions stabilize existing social practices. Changing these routines requires more than innovation-friendly attitudes; it demands space for negotiation between normative aspirations and operational realities.

The analysis of the sustainability assessments shows not only that the interview participants developed different scenarios, but also that there are various areas of tension that were discussed within the interviews (intra) or emerged from the comparison of several interviews (inter). For example, the goal of improving employee health and reducing workload (organizational performance sustainability) and the goal of ensuring consistently high-quality patient care (social sustainability) lead to tension between employee and patient orientation. Furthermore, potential negative effects at the meso and macro levels outweigh the potential benefits at the micro level. A four-day week could relieve the burden for nurses who are already mentally and physically exhausted. Since the majority of nursing staff are female, women in particular would benefit from this relief. For employees, a 4DW has few disadvantages at the micro level, but there are significant risks for the organization and society at the meso and macro levels. Additionally, some risks are offset by certain opportunities, as either short-term or long-term effects are considered. While, for example, improved gender equality, healthier employees, longer job retention, and thus a reduction in the shortage of skilled workers can be expected in the long term, a 4DW may not be able to guarantee patient care in the short term and could increase costs enormously. In addition, positive effects of social and organizational performance sustainability (e.g., fairness, health) are offset by potential disadvantages of economic sustainability (e.g., increased costs). There is a significant tension between the potential positive opportunities for increasing sustainability and administrative, legal, and regulatory hurdles. Hospitals are only able to determine their employees' salaries to a limited extent. Furthermore, due to their partial public status, players in the

Table 2. Summary of empirical findings at the macro, meso and micro level

Level	Economic sustainability		Social sustainability		Organizational performance sustainability	
	Potentials	Risks	Potentials	Risks	Potentials	Risks
Macro	Reduction of healthcare costs and incapacity and disability pensions due to longer duration of employment	Higher costs (financed by taxes or health insurance contributions)	Reduction of poverty in old age due to longer duration of employment; Increasing gender equality Fairness comparing to other professions	Ensuring patient care Public acceptance Opportunity of competitive advantage for hospitals with a four-day work week	Not applicable	Not applicable
Meso	Reduction of shortage of nurses in the long-term	Severe shortage of nurses in the short-term Increasing costs	Not mentioned	Ensuring patient care Fairness between professions	Well-being and health of employees Reduction in labor shortage Opportunity for reorganizing work structures	Not mentioned
Micro	Longer duration of employment	More time for consumption	Gender equality Reduction of poverty in old age	Not mentioned	Not applicable	Not applicable

Table 3. Classification of stakeholders in the areas of tensions surrounding the four-day work week in the healthcare sector

Actors	Employee vs. patient orientation	Micro vs meso and macro level	Short-term vs. long-term effects	Economic vs. social and organizational performance sustainability	Sustainability vs. administrative and regulatory hurdles
Nursing staff	Employee orientation	Micro level	Long-term effects	Social and organizational performance	Sustainability
Hospital management	Patient orientation	Meso and macro level	Short-term effects	Economic sustainability	Administrative and regulatory hurdles
Politics	Patient orientation	Meso and macro level	Equal	Economic sustainability	Both
Trade union	Both	Micro level	Long-term effects	Social and organizational performance	Sustainability
Health insurance funds	Patient orientation	Meso and macro level	Short-term	Economic sustainability	Administrative and regulatory hurdles

healthcare sector are reluctant to exploit competitive advantages, such as offering a 4DW, and pursue equality among providers. What is striking is that some areas of tension only exist because the actors are working on the basis of different scenarios. For example, social and organizational performance sustainability are not in conflict with economic sustainability. Rather, different scenarios are expected.

The stakeholders interviewed are aware that there are possible scenarios, but their opinions tend to favor one scenario (positive effects that reduce potential economic effects vs. enormous economic disadvantages due to the 4DW). They also assign themselves to specific positions on the various axes of tension. The following table shows the positions that the stakeholders assign themselves on the axes of tension. However, it is not the case that every stakeholder group (e.g., trade unions, nursing directors) clearly positions itself in the same way within this area of conflict. Stakeholders are also aware of this area of conflict, as shown in Table 3.

The actors differ not only in terms of their regulation of tension areas but also in the power they wield when implementing innovations. Besides the adoption of organizational innovations is shaped by the interplay of normative commitment and implementation scope. Actors with both high normative orientation and structural capacity (e.g., unions or progressive providers) are best positioned for transformative adoption. In contrast, nursing staff, while highly motivated, often lack decision-making power, resulting in a field of tension. Where implementation scope exists but normative commitment is weak, innovation tends to remain symbolic. If both are low, innovation is unlikely to take root.

The results are consistent with existing research emphasizing that innovation adoption is shaped by both instrumental and symbolic factors (Dietrich et al., 2016). Especially in healthcare, innovations are assessed not only on cost efficiency or performance indicators but also on their alignment with shared values and the public good (Bryson et al., 2014). Public value theory reinforces this understanding by emphasizing that institutions are expected to uphold societal values in addition to performing effectively. At the same time, it can be argued that a reduction in working hours (such as a four-day week) in professions with high workloads creates greater fairness between professions. Values of distributive justice would thus be conveyed by public institutions. The balance between normative commitment and the actors' scope for action gives rise to various areas of tension. Table 4 shows how the various stakeholders in the healthcare system move within the matrix.

Table 4. Actor matrix for normative commitment and implementation scope (own representation)

Actor	Normative commitment	Implementation scope	Field of Action
<i>Micro level</i>			
Nursing staff	High	Low	Lacking power Pressure for reform
<i>Meso level</i>			
Hospital management	Medium	Medium	Compromise/adapted adaption
<i>Macro Level</i>			
Politics	Low	Medium	Symbolic politics/hesitation
Trade union	High	Medium	Negotiation processes
Health insurance funds	Low	Low	Passivity

In summary, the results help explain why promising innovations like the reduced-hours 4DW may still face resistance: not because they lack potential, but because the institutional and normative conditions for adoption are misaligned. It also shows how the adoption of innovation is not a linear process but a negotiation between values and feasibility. This is a balancing act that is particularly visible in complex systems such as healthcare.

Implications for theory and practice

The study shows that normative values significantly influence the evaluation and implementation of innovations in healthcare. The study provides a transferable framework for understanding stakeholder values and commitment to potential organizational innovations in highly regulated systems. In principle, this analytical approach can also be used to study other social and organizational innovations in different industries and provide guidance for researchers, politicians and managers. The method works in several steps: it first looks at ecological, economic, social, and organizational sustainability. Then it identifies possible tensions, links these tensions to the actors involved, and finally assesses both their normative commitment and their ability to act. In doing so, the method helps to explain why certain innovations are implemented or adapted in an industry, while others are not.

All in all, it becomes clear that new evaluation models are needed that incorporate public values such as ecological, social, and organizational performance sustainability. In particular, in highly regulated, semi-public sectors such as healthcare, a change in leadership culture and politics is needed towards more focus on employee well-being and motivation. Fuglsang and Mattsson (2011) propose a sensemaking-oriented tool based on the concept of ‘future perfect thinking’ for innovations. In the discussion about the 4DW, such future narratives could be used to reduce uncertainty and promote acceptance. A vision that conveys how a 4DW could reduce pressure on employees, improve their family life and health, and thus improve patient care and the long-term stability of the healthcare system at the national level can help motivate decision-makers, employees, and the general public. At the same time, this vision must convey how 4DW could reduce gender and occupational inequalities.

In order to evaluate the various scenarios and areas of conflict that the stakeholders have introduced and positioned themselves on, projects are needed to test a 4DW in the healthcare sector. Initial results indicate that this could relieve pressure on the healthcare system and improve sustainability. A project-based approach can help to circumvent administrative and regulatory hurdles while ensuring patient care. In a project-based approach, policymakers, unions, academics, and hospital

management must work together to ensure transition planning, secure wage guarantees, and provide adequate support for employees.

Limitations

This study provides valuable insights into the evaluation and introduction of the 4DW as a social and organizational innovation in healthcare. At the same time, some limitations must be considered. The study focuses on actors within the German healthcare system and does not capture international or cross-sectoral perspectives. The study does not explicitly examine the intersectionality of disadvantages such as ethnicity. Future research could benefit from taking intersectional factors into account, as these could provide further insights into the risks and workloads of specific disadvantaged groups in the healthcare sector.

Besides, further research is needed to test and refine the analytical approach to assess the values and commitment of actors to social and organizational innovations in other innovation contexts and institutional settings. Furthermore, this study mainly covers the perception of feasibility and the effects, not the actual results of implementation. The results provide important orientation for political and organizational practice. The interviews were conducted at an early stage in the debate on a 4DW in healthcare. Public debates, the results of pilot projects, and labor market dynamics may change over time, potentially affecting the attitudes and priorities of stakeholders.

Overall, the study highlights the relevance of actor values and institutional structures in innovation processes but also underlines the need for further research, particularly in terms of implementation dynamics, cross-sectoral applicability, and comparative international perspectives.

Declaration of interest statement. The author declares that there is no conflict of interest. I also verify that my article has not been published by – and is not in press, under consideration, or under review with – another journal or as a book or book chapter, and I confirm that my article, or an earlier version of it, has not been published in an online form.

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