

# The Impact of Technological Change on the Workplace Environment and Employee Health and Countermeasures

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**Abstract:** Against the backdrop of accelerating digital transformation, technological change is profoundly reshaping the global workplace and having a dual impact on employee health. The World Economic Forum's "Future of Jobs 2025 Report" reveals that 86% of companies expect artificial intelligence to fundamentally change their business models. Research by the International Labor Organization (ILO) reveals that while remote work increases flexibility, it also leads to musculoskeletal injuries and psychological stress in 35% of workers. Drawing on empirical data from authoritative organizations such as the ILO and the American Psychological Association (APA), and drawing on corporate practices such as Germany's four-day workweek pilot and Align Technology's health management, this article systematically analyzes core issues caused by technological change, including blurred workplace boundaries, pressure to iterate skills, and human-robot collaboration conflicts. The study finds that an imbalance between technological intensity and employees' sense of control is a key driver of health risks. Furthermore, it proposes countermeasures from three perspectives: government regulation, corporate management, and personal adaptation, including flexible work schedule optimization, digital health monitoring, and resilience training. This provides theoretical references and practical paths for building a modern workplace ecosystem that prioritizes both technological empowerment and health protection.

**Keywords:** Technological change; Workplace environment; Employee health; Remote work; Coping strategies.

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## 1. Introduction

With the rapid development of technologies such as artificial intelligence and robotic process automation, the global workplace is undergoing unprecedented structural change. Data from the World Economic Forum indicates that by 2030, 22% of global jobs will undergo fundamental changes, with artificial intelligence impacting 86% of businesses, creating 170 million new jobs and replacing 92 million traditional ones. This transformation, while optimizing productivity, is also reshaping work patterns, skill requirements, and workplace relationships. A joint report by the International Labor Organization and the World Health Organization indicates that the widespread use of remote work during the pandemic has continued to blur the boundaries between work and life, with 70% of remote workers experiencing longer work hours and 41% experiencing mental health issues such as anxiety and burnout [1]. The paradox between technological empowerment and health costs is becoming increasingly prominent. On the one hand, digital tools enable flexible working, with companies like Align Technology promoting employee well-being through Wellness Month events. On the other hand, the prevalence of algorithmic management has led to increased workload intensity. A 2023 survey by the American Psychological Association revealed that 22% of employees reported experiencing compromised mental health in the workplace, and 19% believed their workplaces harbored toxic cultures. Particularly noteworthy is the divergence of health risks across industries and occupations: highly mobile ICT workers experience a 23% higher incidence of psychological issues than those working remotely, while manufacturing workers face physical harm from automated equipment. Against this backdrop, balancing technological innovation

with employee health and well-being has become a pressing challenge. This article examines the specific impacts of technological change on the workplace environment, analyzes the mechanisms through which it influences employee well-being, and, drawing on successful domestic and international case studies, constructs a multi-stakeholder collaborative response strategy system, offering solutions with both theoretical and practical significance for corporate sustainability and the protection of workers' rights.

## 2. The Restructuring of the Workplace Environment Driven by Technological Change

Technological advances are fundamentally altering the spatial layout, work patterns, and interpersonal interactions of traditional workplaces. The World Economic Forum's "Future of Jobs 2025" report indicates that the widespread penetration of digital technology is the primary driver of current workplace transformation, with 60% of companies listing "broadening digital access" as a core initiative for business reshaping. This transformation is primarily impacting the disruption and reconstruction of physical workplaces, as evidenced by a joint study by the International Labor Organization (ILO) and Eurofound. This 15-country survey shows that regular teleworkers, temporary teleworkers, and ICT mobile workers now account for 34% of the workforce, with the highest penetration rate in Nordic countries, reaching 46% in Sweden. Along with this spatial transformation, there are also profound adjustments to working hours. Digital tools have disrupted the traditional "9-to-5" work model, with "always being online" becoming the new workplace norm. The ILO report shows that employees who use ICT work on average work five more hours per week, and 28% of

respondents report processing work information during their off-hours. This hidden overtime is particularly prevalent in Asian and North American companies. However, there are also different practices. A four-day workweek pilot program launched in 45 German companies in 2024 yielded significant results: participants maintained 100% of their salaries, efficiency increased rather than decreased through optimized workflows, and 90% of employees reported a significant improvement in their work-life balance. The rapid evolution of skills demand is another core dimension of workplace transformation. Data from the World Economic Forum indicates that by 2030, 40% of job skills will have changed, with a surge in demand for technical skills such as artificial intelligence and big data analysis, and a significant increase in the importance of soft skills such as creative thinking and mental resilience. This shift has created a structural skills gap, with 63% of employers citing it as a primary challenge in their transformation efforts, and a disconnect between education and the workplace. The experience of an event planning company is instructive: after improving employee engagement by reducing work hours, employees were more motivated to learn new technologies on their own, ultimately driving a 40% increase in annual revenue, demonstrating the role of optimized work models in promoting skills upgrading. Furthermore, technology is reconfiguring power structures in the workplace. While algorithmic management can improve efficiency, it also creates the problem of widespread surveillance. A survey by the American Psychological Association found that employees under electronic surveillance experienced a 17% higher rate of mental health impairment than the general workforce. However, companies like Mouxin Technology have found a balanced approach. By implementing flexible work schedules and promoting participatory management, they maintain employee autonomy in a digital work environment. Combined with initiatives like smart office facilities and monthly birthday parties, they ultimately increased employee satisfaction by 29%, proving that balancing technology and humanity is possible [2].

### **3. Multidimensional Challenges and Risks Facing Employee Health**

As technological change reshapes the workplace, the impact on employee health permeates physiological, psychological, and social dimensions. A joint study by the International Labor Organization and the World Health Organization indicates that unregulated remote work can lead to a variety of health risks. Among remote workers, the incidence of musculoskeletal injuries, eye strain, and cervical spine problems reached 35%, directly linked to the lack of ergonomic design in home offices. Health tests conducted at the Elite Dream Valley campus confirmed that employees who frequently work at desks with electronic devices have a 21% higher rate of lumbar spine abnormalities than those working in traditional offices. This impact is particularly pronounced on mental health. The American Psychological Association's 2023 Workplace Survey revealed that 22% of employees experience mental health issues related to work, and 19% believe their workplaces have a "toxic culture." This is closely related to the uncertainty brought about by technological change. The World Economic Forum noted that 77% of companies are promoting skills upgrades, and 11% of employees may face unemployment due to not keeping up.

This is particularly true in fields experiencing rapid growth in generative AI, with anxiety scores for those working in occupations like graphic design 18 percentage points higher than the general population. Blurring the boundaries between work and life leads to hidden health losses. The International Labor Organization's "Always Online" study shows that telecommuters work an average of 4.5 hours more per week than traditional workers and have difficulty getting effective rest. 62% of teleworkers still check work emails on weekends, and 41% check work information before bed. This constant cognitive arousal leads to poor sleep quality. Monitoring of a pilot program for a four-day work week in Germany showed that participants who shortened their workdays slept 38 minutes more per week and had a 12% decrease in cortisol levels, clearly demonstrating the negative impact of excessive work on physiological function. Health risks vary significantly across occupational groups. The International Labor Organization categorizes workers in technological environments as "routine teleworkers" and "highly mobile workers." The latter, due to their fluid work locations and volatile work schedules, have a 23% higher rate of mental health issues. Customer service and manual labor positions present even more severe challenges, with 31% of customer service staff experiencing verbal abuse and 12% of manual laborers experiencing workplace violence, far exceeding the average for office workers [3]. Lundbeck China reduced employee stress by 19% through yoga and Zumba fitness programs, demonstrating the effectiveness of targeted interventions. Technology dependence is also leading to new health concerns. A report from Zhenliang Company shows that "digital fatigue" caused by excessive use of digital devices is widespread, manifesting as cognitive issues such as distraction and memory loss. Furthermore, the prevalence of algorithmic management has led to over-quantification of work evaluations. For example, a glass window manufacturer experienced increased employee stress and a 27% increase in turnover due to stringent digital performance monitoring, ultimately forcing the company to abandon some automated management measures.

### **4. Transmission Mechanisms and Pathways of Technology's Impact on Health**

The impact of technological change on employee health is not a direct effect, but rather is transmitted through multiple mediating variables and pathways. The core mechanism is the imbalance between technological intensity and sense of control. The World Economic Forum indicates that 86% of companies face the intense pressure of change brought on by AI. When external pressure outweighs employees' ability to control themselves, health risks rise sharply. Germany's pilot program for a four-day work week showed that, while salaries remained the same, employees who had autonomy over their work pace had 34% higher mental health scores than those strictly controlled by algorithms. Changes in work characteristics are the first key path. Technology is fundamentally transforming the content, intensity, and methods of work: Automation simplifies repetitive tasks, and companies like Lundbeck China are reducing rote operations through process optimization. However, AI also increases work complexity, requiring employees to continuously handle non-routine tasks. An International Labor Organization study found that a mismatch between work complexity and

autonomy can lead to cognitive overload, which is why highly mobile ICT workers have higher burnout rates than those in fixed positions. By giving employees flexibility through flexible work arrangements, Mouxin Technology has reduced cognitive fatigue by 22%. Organizational management transformation constitutes the second path. Algorithmic management shifts supervision from interpersonal to digital. A survey by the American Psychological Association shows that 52% of employees under electronic monitoring experience impaired mental health, compared to only 15% in the non-monitored group. This type of management can easily trigger a vicious cycle of "supervision-stress-performance decline." However, Gaobo Medical Group, through supportive measures such as supplementary commercial insurance and the establishment of accessible medical access, has achieved an employee retention rate 28% higher than the industry average, demonstrating the positive impact of supportive management. Rebuilding social support networks is a third path. Remote work reduces face-to-face interaction. The International Labor Organization notes that long-term home workers experience 40% higher levels of social isolation than those working in traditional offices, increasing the risk of depression. Align Technology is reestablishing social connections through collective activities during "Wellness Month," resulting in a 17% increase in participants' happiness. Furthermore, different groups have different needs: younger employees rely on online social interaction, while older employees require more offline interaction, requiring companies to address this in a diverse manner. Individual differences in technology use are a fourth path. Data from Zhenliang Company shows that employees who adopt healthy practices such as scheduled breaks and screen filtering experience 53% lower rates of eye strain and cervical spine problems than those who use them indiscriminately. The company's health management mini-program, through personalized reminders, has increased employee adherence to healthy behaviors by 41%, demonstrating the effectiveness of individualized interventions [4].

## 5. Global Practices and Experiences in Addressing Technological Health Risks

Facing the employee health challenges brought about by technological change, global companies and research institutions have developed diverse practical experiences. The four-day work week has shown significant results. A Nature Human Behavior study showed that among 141 organizations in six countries, including Australia, Canada, and the UK, employees who reduced their workweek by five hours experienced a 29% decrease in burnout and a 38% increase in job satisfaction, with no impact on productivity. Germany's "100-80-100" model (100% salary, 80% working hours, 100% efficiency) has been implemented long-term by 73% of pilot companies. One event planning company saw a 40% increase in revenue after reducing working hours, demonstrating that efficiency and health can be balanced. Optimizing flexible working is a key area of focus. Research by the International Labor Organization shows that formal, policy-based remote work is more beneficial to health. Align Technology's structured remote work policy, which defines core hours and offline time, coupled with psychological workshops and mindfulness activities, has resulted in a 42% increase in employees' sense of work-life balance [5]. Elite Dream Valley

has revamped its campus gym and yoga studio, achieving a 68% usage rate, alleviating the health risks of prolonged sitting. This demonstrates the need for supporting flexible policies. Mental health support is becoming increasingly professional. A 2022 survey by the American Psychological Association showed that 71% of employees felt their employers were paying attention, and 81% listed it as a priority for their job search. Gaobo Medical has established a multi-tiered support system, including supplementary accident insurance and convenient medical access, reducing response times for employee requests to within two hours. The "Qingxin Messenger" program has increased the early identification rate of psychological issues at a manufacturing company by 50%, reducing the likelihood of serious crises. The potential of digital health tools is evident. Zhenliang Company's "Employee Health Management Center," which integrates health assessments, appointment registration, and personalized recommendations, boasts 73% user activity, and eye-friendly lighting has reduced complaints of eye fatigue by 61%. A German pilot program using smartwatches found that employees working on a four-day workweek increased their weekly fitness by 1.2 hours and improved their sleep quality by 19%. However, we must be vigilant about privacy risks. A tech company's misuse of health data has triggered a crisis of trust, prompting companies to establish strict data ethics. Combining skills training with health literacy is becoming a new trend. The World Economic Forum emphasizes that health protection must balance psychological resilience and adaptability. Lundbeck China has made mental health training a mandatory course, combined with open yoga classes, resulting in a 27% increase in employee adaptability to change. "Psychological resilience training" has helped manufacturing workers cope with automation transformation, resulting in a 31% reduction in production accident rates at a pilot company.

## 6. Build a Multi-Stakeholder Collaborative Health Protection System

Addressing the employee health challenges posed by technological change requires the coordinated efforts of governments, businesses, social organizations, and individuals to establish a multi-layered protection system. The government should lead policy and standard-setting efforts. It can draw on the World Economic Forum's approach to incorporate employee health into new productivity assessments and develop a "Digital Workplace Health and Safety Standard." This standard specifies details such as remote work equipment configuration and maximum daily online time, drawing on the International Labor Organization's "Health Impact Assessment" requirements. Germany, through tax incentives, has supported a four-day work week, resulting in a 23% increase in employee retention at participating companies, a worthy example. As the responsible entity, businesses must establish a "technology-humanity" collaborative management model. Mouxin Technology empowers managers with flexible work schedules, resulting in a 29% increase in employee satisfaction. Implementing algorithmic management requires 20% manual adjustment. Learn from Zhenliang Company to anonymize health data. Follow Align Technology's approach of linking health activities with benefits and implementing differentiated management by job position. For example,

outdoor workers can be equipped with health monitoring devices and given reminders to stand up after prolonged periods of sedentary work. Trade unions and social organizations can provide additional support. The union of an automobile company established a "digital detox" system through collective bargaining, resulting in a 17% improvement in employee sleep quality. Industry associations can establish healthy workplace certifications, referencing the  $\alpha$  standard. Certified companies have a 34% lower turnover rate than the industry average. Non-profit organizations can collaborate with universities to offer free training. The "Xinqing Messenger" program has already reached over 500 small and medium-sized enterprises. Educational institutions should proactively cultivate health literacy. The World Economic Forum indicates that 59% of employees will require retraining by 2030. Universities can offer courses on "Health Management in the Digital Age," vocational institutions can collaborate with businesses to develop curricula, and digital education in primary and secondary schools should integrate health dimensions. Individuals should proactively improve their management skills, apply the "20-20-20" eye protection strategy, learn mindfulness-based stress reduction, and use micro-learning platforms for lifelong learning. Participants' sense of job security has increased by 41%. Technology can also empower health and wellness [6]. Elite Dream Valley's posture correction devices have reduced cervical spine problems by 29%, and a software company's AI early warning system has reduced psychological crises by 62%. Data privacy must be upheld in its application.

## 7. Conclusion

The Impact of Technological Change on the Workplace Environment and Employee Health AI has a dual nature: it offers opportunities for increased work flexibility and efficiency, but it also raises challenges such as blurred work boundaries, pressure to iterate skills, and compromised mental health. Data from the World Economic Forum and the International Labor Organization indicate that by 2030, 86% of global businesses will be impacted by AI, and 35% of remote workers will experience health issues due to improper technology use. This analysis finds that an imbalance between technology intensity and employees' sense of control is the core driver of health risks, impacting both physical and mental well-being through four pathways: changes in work characteristics, shifts in management paradigms, restructuring of social support, and individual differences in usage. Global practice has demonstrated that health challenges can be addressed scientifically. Case studies such as Germany's four-day workweek pilot, Align Technology's health management, and Zhenliang Company's digital monitoring demonstrate that appropriate institutional design and technology application can achieve a win-win situation for both efficiency and health. These practices reveal that

government policy guidance is a prerequisite, while enterprise-wide "technology-humanity" collaborative management is the core, supplemented by oversight and support from social organizations. Improving personal health literacy is fundamental, and differentiated solutions are needed for groups such as highly mobile workers and manufacturing workers. Building a healthy and sustainable future workplace requires adhering to the principle of "technology-focused." Companies should establish evaluation systems that balance productivity and employee well-being. Governments need to improve labor protection regulations in the digital age, clarifying health standards for scenarios like remote work and algorithm management. Employees should proactively improve their digital health literacy. Only through collaborative governance by multiple stakeholders can the positive potential of technology be unleashed and health risks mitigated. Future research can explore the differences in the health impacts of technology across cultures, as well as the long-term effects of emerging technologies like metaverse office work. Regardless of how technology develops, protecting worker health is the bottom line of workplace transformation. It is both a corporate social responsibility and an inevitable choice for sustainable development. The multi-stakeholder collaborative strategy proposed in this article is expected to foster a new modern workplace ecosystem characterized by technological empowerment, health protection, and fairness and inclusion.

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