



# **Policy document 4:**

# AGE AND DIGITALIZATION IN WORK

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Summary and recommendations

#### Introduction

In an era of rapid technological progress, we are confronted with new challenges, including those resulting from demographic changes. We would therefore like to contribute to finding solutions to these challenges and promoting a more equal working environment. This policy paper presents the results of the Local Policy Workshop on "Age and Digitalization in Work," organized by the COST Action DIGI-net and held under the direction of PhD Martina Rašticová and Professor Petia Genkova, as part of the European Cooperation in Science & Technology (COST). The workshop took place on Wednesday, May 7, 2025, from 8:30 a.m. to 5:00 p.m. at the Caprivi Campus of Osnabrück University of Applied Sciences as a hybrid event. Twenty-four participants attended in person, and sixteen participants joined the event online. A total of 40 individuals from academia, businesses, organizations, associations, and politics discussed the challenges of an increasingly digitalized working world for older employees.



Picture: <u>front row from left:</u> Kyra Dunkel, Petia Genkova, Marie Großmann, Laura Gehring, Martina Rašticová, Sarah Gonschorek, Monika Willimzig, <u>back row from left:</u> Eugen Giesbrecht, Martin Kater, Mattea Wehage, Lisa Tometten, Annika von Redwitz, Michael Krämer, Fredi Lang, Iris Finger.

#### **Theoretical background**

Digitalization creates many challenges in the workplace that affect employees of different ages to varying degrees. This paper focuses on the obstacles and opportunities that arise for older employees in an increasingly digitalized workplace.

Ageism is the most common form of discrimination in Europe (Rychtaříková, 2019), with half of all people worldwide demonstrating and legitimizing it (World Health Organization, 2021). Structural ageism can be seen in many areas, including biased training data/selection criteria, exclusion from innovation projects, strategic meetings, and creative processes; fewer career advancement opportunities; lower evaluations; and less access to digital projects, training, and strategic roles.

Employees aged 50 to 64 only account for around 10% of the volume of further training (Komp-Leukkunen et al., 2022). Missing or delayed training opportunities can lead to real skill gaps, perpetuating stereotypical perceptions of older employees. However, ageism does not affect everyone equally. According to gender-age bias, older women are particularly impacted. For example, AI tools disadvantage older women with career breaks, especially if they have a migration background or care experience (Stypińska, 2023). They are also less likely to be perceived as having digital skills or an interest in technology, and they are considered less capable of development. Gender-dependent ageism is evident not only in further training, but also in task distribution and team composition (Chen et al., 2024; Komp-Leukkunen et al., 2022).

The need to act is justified, not least because the world of work is changing. Digital progress is meeting demographic changes. By 2023, one in four employees was aged over 55 (Federal Statistical Office, 2025). Over the past ten years, the employment rate of 55- to 65-year-olds has increased more quickly than that of 15- to 65-year-olds. In the coming decades, Germany is at risk of losing a seven-digit number of workers due to demographic change (Institute for Employment Research, n.d.). One key solution is to keep older employees in their jobs and actively integrate them. Digitalization requires continuous learning, new skills and flexible adaptation. Older employees have valuable experience, but they sometimes consider themselves to be less digitally skilled. Therefore, the aim must be to promote age-appropriate digital transformation.

This paper therefore outlines recommendations for action to meet these challenges.



The event generated various fields of work, which were addressed in an overlapping manner in the presentations and workshops. These were (1) ageism and discrimination, (2) digital transformation in the face of artificial intelligence, (3) best practices and digitalization as an opportunity, (4) organizational and structural aspects of supporting older employees and (5) the needs and potential of older employees. In the following, these fields of work – structured by the presentations and workshops – will be addressed and key findings and recommendations for action will be developed.



# Ageism in digital transformation: invisible barriers and structural exclusions

# Presented by Dr. Elisabeth Langmann (University of Augsburg, Ethics in Medicine)

*Fields of work: ageism and discrimination, organizational and structural aspects of supporting older employees* 

Digital technologies are changing the world of work, but not everyone benefits equally. Older employees are structurally disadvantaged by ageism during the digital transformation process. These barriers are invisible and are created by technological developments, work culture and algorithmic processes. Ageism manifests itself at

- intrapersonal level (e.g. stereotype threat: the fear of fulfilling stereotypes negatively influences the cognitive performance of older people; Armstrong et al., 2017; Lamont et al., 2015)
- interpersonal level (e.g. less respect for older people's opinions and decisions, doubts about competence, avoidance of contact; World Health Organization, 2021) and
- institutional level (e.g. technology design and algorithmic decisions: structural reproduction of exclusions through tools; Stypińska, 2023; Chu et al., 2022).

Ageism is a barrier to innovation in the digital transformation (with expectations as a central problem). Not only does ageism hinder individuals, it also hinders innovation and inclusion. In the digital transformation, ageism manifests itself less through explicit discrimination than through structural exclusions, for example in access to further training, technology policy, and organisational expectations. Therefore, successful digital transformations must also overcome ageism. The following recommendations for action can be used for this purpose:

- **1.**Further training should be designed inclusively. This means planning for diverse target groups, using low-barrier formats and developing individually tailored learning opportunities.
- **2.**Participation is an important success factor. This means active involvement in digitalization processes and strategy development.
- **3.**Artificial intelligence and tools should be critically reviewed for bias in their selection criteria and training data, in line with existing recommendations.
- **4.**Organizations should reflect on their personnel and organizational policies. This applies to funding, application portals, and task allocation, for example.
- **5.**Ageism should also be overcome on a personal level, for example by confronting age-related images and prejudices and undertaking training.

# Later Life Workplace Index (LLWI) and digitalization

#### Presented by Prof. Dr. Jürgen Deller and Mattea Wehage (Business Psychology, Institute for Management & Organization, Leuphana University of Lüneburg)

*Fields of work: organizational and structural aspects of supporting older employees, needs and potential of older employees* 

The Later Life Workplace Index (LLWI; Wilckens et al., 2021) was developed to describe age-friendly work environments. It has since been validated in 20 countries for this purpose. It is based on nine dimensions: organizational climate, leadership style, work design characteristics, health management, individual development opportunities, knowledge management, retirement transition, continued employment opportunities, and health and retirement coverage. High LLWI dimension values correlate positively with perceived health, perceived ability to work, intention to work at retirement age, work engagement, and person-job fit, and negatively with work stress. Digitalization in the workplace appears to influence age-relevant organizational and personnel practices, and the LLWI accordingly offers approaches for adequately including the needs of older employees.

- Organizational climate: equal opportunities in terms of technical equipment, reduction of age stereotypes with regard to digital devices and content
- Leadership style: creating opportunities for exchange in the hybrid working world ("leadership at a distance"), employee training on digital content as a management task
- Work design characteristics: ergonomic design of mobile workstations, voluntary use of flexible forms of work (when possible)
- Health management: Negative physical and psychological consequences of digital work require specific health services, availability of services for employees with flexible work locations
- Individual development opportunities: relevance of further training in the face of technological change, potential for substitution (takeover of activities/professions by digital technologies)
- Retirement transition: technologies facilitate ongoing involvement and maintaining contact
- Continued employment opportunities: challenge posed by digital progress and existing stigmatization of technological skills, facilitated by digital technologies that enable flexible working arrangements and eliminate location dependency
- Health and Retirement coverage: use of digital information and advice services can increase awareness of opportunities

# Artificial intelligence, lifelong learning, and critical thinking in the labor market

#### Presented by Katharina Mosene (Leibniz Institute for Media Research | Hans Bredow Institute)

Fields of work: ageism and discrimination, digital transformation in the face of artificial intelligence, best practices and digitalization as an opportunity

In the future, decisions in all areas of society will be made based on algorithms, and artificial intelligence (AI) will carry out work tasks. However, the results of these supposedly innovative systems depend largely on the data with which they have been trained. Women and other marginalized groups are often underrepresented in training datasets, so AI reproduces and perpetuates existing systems of discrimination and exclusion.

The European Commission's 2020 White Paper, "On Artificial Intelligence — A European Approach to Excellence and Trust," states that the use of AI could violate fundamental rights, including freedom of expression and association, respect for human dignity, and non-discrimination based on gender, race/ethnicity, religion/belief, disability, age, and sexual orientation. Therefore, there is a high level of responsibility associated with the use of AI systems.

It is important to consider the intersection of different diversity characteristics and experiences of discrimination. Accordingly, age is one characteristic among many, and older employees should be considered appropriately, as this group includes people with different experiences of discrimination who are marginalized by AI systems in different ways.

Although artificial intelligence is intended to minimize human bias, it has not yet achieved this adequately because it is based on past data and thus reproduces past biases. In decision-support systems, humans must remain involved in the process (human-in-the-loop).

Lifelong learning is a key response to digitalization and requires further training, adaptation, and flexible and agile action. This raises the following questions: Who has access to further training? What technology is made available for this purpose? What kind of recognition is given? Older employees must overcome greater obstacles to participate equally in lifelong learning. Therefore, lifelong learning should be understood not only as adaptation, but also as emancipation. When it comes to digitalization, the question of which skills should be promoted

is often answered with technical skills.

### Al in demographic change: opportunities, limits and success factors

#### Presented by Martin Kater (Regional Future Center North)

Fields of work: digital transformation in the face of artificial intelligence, best practices and digitalization as an opportunity, organizational and structural aspects of supporting older employees

Fields of work: digital transformation in the face of artificial intelligence, best practices and digitalization as an opportunity, organizational and structural aspects of supporting older employees

Demographic changes are creating new demands for care, participation, and quality of life in old age. Artificial intelligence (AI) can support these needs through assistance systems, digital care aids, and intelligent mobility solutions, for example. However, its use also raises questions. How can we ensure that AI is human-centered? Where are the ethical and technological limits? AI in old age presents both opportunities and challenges, as well as key success factors for socially acceptable, everyday-use implementation. Practical examples illustrate how AI can meaningfully support older adults' lives without losing focus on the individual. These include personalized health analyses (e.g., creation of individual risk protocols and recommendations for preventive measures), intelligent workplace adaptations (e.g., AI-supported ergonomic analyses and optimization of movement sequences), digital health coaches (e.g., reminders to take exercise breaks and gamification elements for motivation), and early detection of mental overload (e.g., analysis of speech and behavior patterns for stress indicators by AI in compliance with data protection regulations).



#### **Technological Access and Practicality**

Older employees benefit particularly from intuitive, visually supported, and voice-controlled AI tools. Low-threshold access to AI applications is the key to success here. Access to technology should be exploratory rather than deficit-oriented. "Learning labs" and AI workshops allow for fearless experimentation and reduce uncertainty.

#### Further training: Didactics and communication

Older employees learn best when AI applications are tailored to their work reality. Examples, simulations, and real use cases facilitate the transfer of knowledge. Self-directed learning that considers their learning speed and existing skills increases motivation. Modularized, adaptive learning opportunities are important. Learning in groups and exchanging ideas with colleagues promotes learning success and reduces inhibitions.

#### Mindset and organizational culture

Older employees should be taken seriously as experts in their day-to-day work and involved in shaping AI processes to strengthen their acceptance and sense of self-efficacy. Managers should be open to AI and actively support further training by providing autonomy, acknowledging efforts, and setting an example of a willingness to learn. Creating a culture that promotes learning also means breaking down age-related prejudices.

# Successfully exploiting the opportunities of digital transformation through future-proof organizational cultures

#### Presented by Lutz Stratmann (LL.M., former Minister, Demography Agency for Economy GmbH)

*Fields of work: organizational and structural aspects of supporting older employees and needs and potential of older employees* 

Due to a lack of qualified workers, utilizing the competencies, experience, and social skills of older employees has become increasingly important. While many older people use digital technologies in their personal lives, they often struggle to adapt to new ways of working in a professional environment to avoid potential errors or underperformance. These employees tend to be more cautious and plan more thoroughly than their younger colleagues, which makes integrating them into digitalization more difficult.

Between 75% and 80% of all change processes fail (Mutaree, n.d.). When companies experience acute pressure to change due to severe sales losses, delivery shortages, or a lack of qualified workers, the necessary resources for digitalization and AI implementation are often unavailable because the optimal time for digitalization or change processes has passed.

The most important areas for a successful change and digitalization strategy are:

- developing an AI and digitalization strategy, and protecting and using data to resist cybercrime,
- further training and raising awareness among managers regarding the motivation and involvement of older employees,
- the implementation of further training and "knowledge management" (especially alternative options for lifelong learning, such as job rotation, mentoring programs, and mixed-age teams),
- the documentation of explicit and implicit knowledge, and
- adapting work organization to flexible working time models aims to retain older employees and attract junior staff.



# Progress or frustration? - Thinking digitalization inclusively and across age groups

#### Presented by Laura Gehring (Senior Consultant HR-Digitalization alliantis GmbH)

Fields of work: best practices and digitalization as an opportunity, organizational and structural aspects of supporting older employees, needs and potential of older employees

Companies have different expectations, experiences, and hurdles with digital tools, which are often related to age. While some employees welcome new applications, others feel overwhelmed or excluded. Failure to consider the needs of different target groups, as well as a lack of prior communication, can lead to digitalization being perceived as the enemy. Conversely, having multipliers of the same age or with a similar background working in tandems, as well as actively involving young interns, trainees, and working students in knowledge transfer, can ensure digitalization succeeds for everyone. Willingness to change, rather than age, should be seen as the key factor.

Various professions face challenges when introducing new digital tools, such as employees with high vs. low technical affinity and those who feel overstrained, as well as the following solution approaches:

Employees with little technical affinity could benefit from adaptive learning, reasons for introducing digital tools, an inclusive user interface (simple language, consistency, and few abbreviations), active participation, learning tandems, guidelines tailored to specific target groups, and a trusting atmosphere where weaknesses can be acknowledged.

The extra work of employees with a high technical affinity ("invisible work") should be targeted and rewarded, for example by holding a technology consultation hour or working in learning tandems. These employees can participate in pilot projects before new tools are implemented to identify and overcome potential obstacles.



# Fit for the digital future: needs and solutions for older employees

Presented by Annika von Redwitz (Redwitz CONSULT, Consulting for Diversity Management)

*Fields of work: organizational and structural aspects of supporting older employees, needs and potential of older employees* 

Digitalization is changing the work environment at a breathtaking pace, posing new challenges for older employees. What specific needs do older employees have? How can they work successfully and with motivation in the digital age? Unfortunately, many myths about older employees hinder them in their jobs. For example, some people believe that it's not worth investing in older employees. Yet, 72.3% of 55- to 64-year-olds are employed, and the proportion of workers aged 45 and older is increasing. Due to demographic changes, Germany is expected to lose around 7 million people of working age by 2035. The myth that older employees are not motivated can be dispelled by general, age-independent factors of work motivation, such as meaningfulness, appreciation of experience, flexible working time models, and holistic leadership, including health management. The idea that older employees are less capable of learning and performing can be countered by the fact that competence and performance persist into old age; fluid intelligence decreases with age, while crystallized intelligence increases; experiential knowledge and stress resilience are acquired over the course of a career; and individualized, self-directed learning is enjoyable regardless of age.

Key solutions for the digital future may include participation, time allotted for onboarding, good ergonomics, accessible and ongoing support, reverse mentoring, and mixed-age teams.



Change processes in the work context in the course of digitalization: experience, structure, application and action knowledge in the different generations and disciplines

Presented by Fredi Lang (Professional Association of German Psychologists)

*Fields of work: organizational and structural aspects of supporting older employees, needs and potential of older employees* 

Current changes in the workplace are primarily characterized by digitalization and the need to ensure that departing employees' knowledge is passed on to subsequent generations. To cope with these challenges, companies require a planned, structured approach to effectively support the handover and transition process. In addition to different competencies regarding digital and analog processes, as well as the structures and framework conditions surrounding the different professional tasks, perspectives can be incorporated into communicating and designing changes within the company. Additionally, different working attitudes and processing strategies impact cooperation. The following section examines key tasks and solution strategies to help companies develop effective digital structures and improve their employees' digital skills. It is assumed that, in digital learning processes, age categories will be replaced by levels of digital competence as access criteria.

- 1. Qualification and further training should be mixed-age and job-oriented.
- 2. Continuous and intensive qualification of different generations is necessary.
- **3.**Concrete local reference is central in the analysis of the need for qualification and organizational development.
- **4.**Practice-oriented qualification measures with mixed groups (e.g. age, gender,...) on digital competence and stereotypes should supplement company qualification.
- **5.**The reduction of stereotypes related to age and digital competence, especially towards women, is essential to promote employment quotas.
- 6. Change processes in the context of digitalization and generational change are a management task, which includes a planned approach and, if necessary, company representatives and SME support through external structures.

# Older workers in demographic change: employment potential in international comparison

Presented by Prof. Dr. Ulrich Walwei (Institute for Employment Research)

*Fields of work: organizational and structural aspects of supporting older employees, needs and potential of older employees* 

As in many other Western countries, Germany's large birth cohorts are reaching retirement age. Against this backdrop, there is a growing focus on labor force participation among older individuals. However, employment rates vary considerably from country to country. Japan, New Zealand, Iceland, Norway, and Sweden, for example, all have higher employment rates for older people than Germany. A country comparison reveals important points that Germany could build on, such as a high female employment rate, continuous improvements in the educational level of the population (including further vocational training), a low wage gap between older and younger workers, high recruitment rates for older workers, and a consistent, publicly visible anti-discrimination policy.

In order to create conditions that facilitate and enable participation in the labor market by older employees, the following questions can be helpful:

• Do older workers still want to work (before or after retirement)?

- Motivational aspects, recognition/appreciation

- Do older workers still have to work?
  Insufficient retirement income, financial obligations
- Can older workers still work?

- Health status, skills and competencies

• Are older workers still allowed to work?

-Taxes and contributions, age limits in collective agreements and individual employment contracts

In addition to the aforementioned influencing factors derived from the country comparison, there are other factors that facilitate the employment of older workers. These include general labor market development, which also favors older employees; the composition of jobs and the workforce, such as labor market participation by qualification groups, the health status, and the educational level of the older population; and institutional regulations and work and employment incentives, such as the availability of early retirement options, wage replacement benefits, and dismissal and fixed-term employment laws.

In summary, potential opportunities exist at the individual level (e.g., education and health prevention), within companies (e.g., considering the skills and employment preferences of older workers, age-appropriate work, occupational health and safety, and further training), and in terms of regulations (e.g., work incentives, such as tax and social security regulations; flexible employment laws; pension access based on "health expectations"; and addressing occupational stress).

#### Summary and recommendations

Due to demographic change, Germany is losing important workers. This creates the need to retain older employees and transfer their knowledge to future generations instead of losing it when this group of employees leaves. A significant challenge in this context is addressing and reducing ageism and discrimination, which limit the opportunities of older employees in an increasingly digitalized working world. Digital transformation and artificial intelligence can reinforce these challenges, but they can also be part of the solution, providing an opportunity. Numerous best practices already exist. To meet the needs and potential of older employees, actions can be taken at the organizational and structural levels.

#### Reducing Ageism

Ageism is a form of discrimination based on stereotypes about older people, particularly older employees. This form of discrimination should be eliminated at all levels. On a personal level, this can be achieved by challenging age-related stereotypes and prejudices, as well as by raising awareness through training. On an organizational level, this can be accomplished by implementing a visible anti-discrimination policy. Organizations should reflect on their personnel and organizational policies and implement anti-discrimination strategies in areas such as technical equipment, promotions (e.g., small pay gaps), application processes (e.g., high recruitment rates for older employees and women), and task allocations. Artificial intelligence and associated tools should be critically reviewed for bias in their selection criteria and training data, in accordance with existing recommendations. Reducing discrimination to achieve equal opportunities is essential, as is eliminating stereotypes related to age and digital skills, especially toward women, to increase employment quotas.

#### • Further training and qualification of older employees

Providing increased training specifically for older employees is key to dealing with digital technologies. Lifelong learning is a central response to digitalization and can include alternative formats, such as job rotation, mentoring programs, and mixed-age teams. Training courses should be designed to be inclusive, with diverse target groups, low-barrier formats, and personalized learning opportunities. Self-directed learning that considers the individual's learning pace and existing skills increases motivation. Modularized, adaptive learning opportunities are important. Learning in mixed-age, mixed-gender, etc. groups and exchanging ideas with colleagues promotes learning success and reduces inhibitions.

#### Summary and recommendations

#### • Leadership and Organization

In the context of digitalization and generational change, change processes are a management task that requires a planned approach. If necessary, this approach should include company representatives and SME support from external structures. Managers should undergo further training and awareness-raising regarding the motivation and involvement of older employees. In the context of corporate culture and artificial intelligence, it is important to take older employees seriously as experts in their day-to-day work and involve them in shaping AI processes so they feel accepted and empowered. Taking older employees seriously as experts in their day-to-day work and involving them in shaping AI processes strengthens their acceptance and sense of self-efficacy. Managers should be open to AI and actively support further training through autonomy, acknowledgment, and setting an example of a willingness to learn. Building a culture conducive to learning also means breaking down age-related prejudices (see above).

#### • Organizing the Workplace

Work organization can play an important role in supporting older employees. This includes the ergonomic design of mobile workplaces and the voluntary use of flexible work schedules, as well as time allotted for familiarization with digital tools. Adequate health management is also necessary to address the negative physical and psychological consequences of digital work. Health offerings should be made available to employees with flexible work locations.

#### • Artificial Intelligence and Digital Tools

At the company level, a strategy for AI and digitalization (for the protection and use of data) should be developed to resist cybercrime. At the employee level, older employees particularly benefit from intuitive, visually supported, and voicecontrolled AI tools. Low-threshold access to AI applications is the success factor here. Rather than taking a deficit-oriented approach, access to this technology should be exploratory. "Learning labs" and AI workshops allow for fearless experimentation and reduce uncertainty. Regarding further training in digitalization, the focus should not only be on technical skills, but also on reflecting on how to use and interact with AI systems.



#### Summary and recommendations

Participation is a key success factor. This refers to the active involvement of older employees in digitalization processes. Employees with a high affinity for technology should be recognized for their extra work ("invisible work"), for example, by holding a technology consultation hour or working in learning tandems. Employees with a high affinity for technology can be involved in pilot projects before new tools are implemented to identify and overcome potential obstacles. Employees with little technical affinity can be involved in introducing digital tools in a participatory manner by presenting reasons and giving them the opportunity to play an active role.

#### • Organizing the Transition to Retirement

Technology can facilitate ongoing engagement and communication during this period. However, digital progress and the existing stigmatization of technological skills can pose challenges to continued employment after retirement. However, digital technologies, flexible working arrangements, and the dissolution of location dependency can be viewed as opportunities.

#### • Consolidating Knowledge and Experience

Documenting explicit and implicit knowledge ensures useful generational change and secures the theoretical and practical expertise of older employees. Learning tandems allow different generations to learn from and support each other.

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