DIGITAL SKILLS FOR SENIOR WORKERS: A SYSTEMATIC REVIEW

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ABSTRACT

Older workers often grew up in a time before widespread use of digital technology. While younger generations were introduced to computers, smartphones, and the internet from a young age, older workers may not have had the same exposure to these tools. As a result, they might not be as comfortable or confident in using newer technologies. The speed at which technology evolves can be overwhelming. Older workers who might have learned a specific software or tool in the past may struggle to keep up with newer versions or entirely different tools that have become industry standards. In this article, we offer a systematic literature review (SLR) in order to locate and evaluate the scholarly conversation on digital skills fluency and older employees from psychological, sociological, and economic perspectives.

The results that have emerged from the literature suggest four important strands, both for academics and practitioners: Digital skills as a success factor in aging, Psychosocial Barriers and Stereotypes, Training, Development and Transfer of Skills, Adaptation Strategies and Digital Fluency. From SLR of 154 papers concerning the objectives of the study, the key areas of focus, theoretical models and research gaps are identified.

INTRODUCTION

An increasingly aging workforce and advances in technology are changing work environments and structures. The continued employability of older adults requires them to participate in training programs to ensure their competence in today's workplace (Singh, 2021). This implies that workers, especially older workers who may not have been exposed to changes in technology, will continually need to engage in training and retraining activities to remain competitive in the workforce (Vickers & Ziebarth, 2016). The European population, encompassing the 27 EU member countries, is expected to increase from 507.2 million in 2013 to 522.8 million by 2060, with the proportion of seniors (aged 65 or older)

predicted to rise by 10%. Meanwhile, the working-age population is projected to decline by 9.4% over the same period (European Commission, 2018). A similar trend is evident in the United States, where in 2016, individuals aged 65 and older made up 18.6% of the adult working population (ages 16 and above), with this percentage expected to grow by an average of 0.6% per year until 2026. In Japan, more than 25% of the population was aged 65 and older in 2014, and this proportion is forecasted to reach 40% by 2060 (Debroux, 2016). While there is significant focus on gender, racial, and cultural biases in the workplace—each of which is critical for various reasons—one of the most prevalent and challenging biases we face is age bias. People are often judged based on their age, and this is becoming an increasingly significant issue in the workplace (Bersin & Chamorro-Premuzic, 2019). Also, the increasing digitization of the workforce has raised significant challenges for senior workers, who must adapt to rapidly evolving technologies to remain competitive in the labor market (Semenova et al., 2023). Digital skills have become essential for job performance, career longevity, and workforce inclusion, particularly for senior employees facing digital transformation (Van Dijk, 2020; Merriam & Baumgartner, 2020). A recent report by the Brookings Institution developed a "digital score" that combines the level of digital knowledge required for a job, the significance of digital skills for the role, and the frequency with which technology is used on the job (Muro et al., 2017). Thus, the COVID-19 pandemic, which has pushed millions of people into remote work, has underscored the critical importance of both access to technology and the digital skills required to use it effectively (Hecker & Briggs, 2021; Hecker & Loprest, 2019; Muro et al., 2017).

Digital transformation affects all industries, necessitating the upskilling and reskilling of employees, especially those nearing the latter stages of their careers. Senior workers often encounter barriers in acquiring digital skills, including resistance to change, lack of formal training, and age-related cognitive factors (Berkowsky et al., 2017; Czaja et al., 2006).

Thus, for people who are not prepared in using technology or struggle to adapt to technological advancements, living in a digitalized society can be challenging (Francis et al., 2019).

In studies concerning labor market participation, the term "older worker" usually refers to workers aged 50 or 55 and above (Kooij et al., 2008). This threshold is chosen because, in many countries, this age range is associated with a decline in labor market participation rates (OECD, 2005). Therefore,

following this approach, we have chosen to consider individuals aged 50 or older as older workers. This study focuses on the critical role of digital skills in enhancing employability, productivity, and knowledge-sharing among senior workers. Digital skills are part of a broader context related to Artificial Intelligence, an increasingly pervasive phenomenon that affects not only organizations but society as a whole. This topic is especially relevant from an organizational perspective, as the exclusion or incomplete training of a significant portion of the workforce, particularly senior workers, could lead to viewing digitalization as a cost rather than an opportunity, resulting in the loss of essential skills. In this paper, the topic of ageing workforce management is addressed from an organizational perspective, with the aim of understanding how older workers can be supported and engaged in learning digital skills. Furthermore, our model can have practical implications related to HRM policies and practices that companies may adopt in order to create an inclusive organizational context.

LITERATURE REVIEW

Digital Capital

As the digitalization of work progresses rapidly, daily tasks are becoming increasingly reliant on employees' use of various digital technologies (Warhust & Hunt, 2019). Nowadays, for workers, investing in digital skills has become essential. Theoretically, this can be framed with the concept of "digital capital" (Park, 2017; Ragnedda, 2018). In this context, digital capital is a contemporary concept that enhances our understanding of digital inequalities by defining the set of skills, abilities, and external resources that facilitate individual digital engagement and its associated benefits (Ragnedda et al., 2020). While digital competence refers to the abilities one has acquired to use digital technologies, digital access encompasses the external resources available to individuals for full participation in the digital world. Both components are dynamic and subject to growth. Digital capital differs significantly among groups of individuals based on factors such as age, education, income, and geographic location (Ragnedda et al., 2020).

Workers aged 50 and above, in particular, tend to have less internet experience (König & Seifert, 2020) and fewer digital skills (Cotten, 2021), making them more prone to facing a digital capital gap when required to work remotely in a digitally-driven home office. For senior workers, building digital capital

means having access to the tools, knowledge, and networks that empower them to leverage technology effectively in both personal and professional contexts.

Employability, productivity and knowledge-sharing

Digital skills can range from basic computer literacy to more advanced technical skills. According to a more recent work by Moraru et al. (2017), Virjan and Creţu (2015), the decline in physical and cognitive abilities associated with aging does not necessarily impact performance and productivity. Studies have shown that there is no need to treat older workers differently from younger ones, as long as employers acknowledge that, with age, physical and mental capabilities may experience a slight reduction.

Stating that individuals' functionality is subjective and that its variation among people does not depend on chronological age, it cannot be asserted that the behaviors exhibited and the abilities of older adults depend on age considered as the primary variable (World Health Organization, 2015).

The evidence highlights that the economic potential of older workers is often underutilized, and there is a growing recognition that workers in this category should also be adequately supported through retention and re-training policies (Fachinger, 2019; Caines et al., 2020) to ensure economic efficiency and corporate productivity, while addressing the ongoing effects of population aging. Crystallized intelligence refers to cognitive abilities that depend on the accumulation of knowledge, experiences, and skills acquired throughout life. This concept contrasts with fluid intelligence, which is related to the ability to reason and solve new problems (Cattel, 1963; Horn & Cattel, 1966).

Unlike fluid intelligence, which tends to decline after the age of 20-30, crystallized intelligence can continue to develop even in older age. Longitudinal studies have shown that many individuals experience an increase in their abilities until the ages of 60-70, and these remain stable until the age of 80, provided there are no neurodegenerative conditions (Schaie, 2005; Salthouse, 2004).

Although crystallized intelligence is strongly influenced by education, there is research showing how it can also develop through non-formal learning paths and life experiences (Ackerman, 1996; Ceci, 1991). Recent studies suggest that the development of this form of intelligence is also influenced by motivational factors and personal engagement in specific areas (Chamorro-Premuzic & Furnham, 2005;

Ackerman & Heggestad, 1997). It is also observed that those who already possess a high level of crystallized intelligence tend to acquire new knowledge more easily, thus creating a Matthew effect (the rich get richer) in cognitive development (Stanovich, 1986; Walberg & Tsai, 1983).

A lot of cognitive abilities—such as working memory, attentional processes, and spatial cognition that are important to learn, show decline with age, especially under conditions of complexity or when a task represents an unfamiliar cognitive domain (Park et al., 2002). Additionally, older adults are often impacted by stereotypes regarding age-related declines in performance, which can lead to negative perceptions among managers about their ability to be trained (Van Dalen & Henkens, 2020).

Tseng (1972) defined employability as the occupational knowledge and skills linked to the job market. It becomes increasingly relevant with changes in the economy, as individuals with these transferable skills navigate across various work situations. Here, employability skills refer mainly to "those basic skills necessary for getting, keeping and doing well on a job". Digital skills are essential for senior workers who want to stay competitive in today's ever-evolving job market. Updating digital skills not only increases job opportunities but also helps maintain relevance and ensure professional security (Lyons et al., 2019).

RESEARCH METHODOLOGY

Older generations, namely Gen X and Baby Boomers, show a less pronounced tendency to adopt and use new technologies; this phenomenon can potentially create a digital divide within organizations (Widen et al., 2020). This paper examines the intersection of digital skills and senior workers, analyzing scientific and managerial literature to identify influential studies, research trends, and practical insights. The objective is to highlight the significance of digital skills training, strategies for overcoming skill gaps, and the benefits of fostering digital literacy among older employees.

The data for this study were extracted from Scopus, a widely recognized bibliographic database (Zhao & Strotmann, 2015). The methodology employed follows a Systematic literature review (SLR). A SLR

ensures a structured, transparent, and replicable approach to digital skills research for senior workers (Denyer & Tranfield, 2009).

Scope of the analysis

The primary intention of this paper is to analyse the state of the art regarding the topics of digital skills fluency and older workers. Guided by the research question: "How do digital skills influence the employability and adaptability of older workers in the contemporary labour market?", this analysis aims to explore the scope and depth of the academic discourse on these topics. After conducting several attempts to refine the search, the set of keywords to be used for query creation was identified on Scopus: (TITLE-ABS-KEY ("digital") OR TITLE-ABS-KEY ("tech*") OR TITLE-ABS-KEY ("computer literacy") OR TITLE-ABS-KEY ("Cyber") AND TITLE-ABS-KEY ("Skill*") OR TITLE-ABS-KEY ("expertise") OR TITLE-ABS-KEY ("Abilit*") OR TITLE-ABS-KEY ("proficiency") AND TITLE-ABS-KEY ("Old* work*") OR TITLE-ABS-KEY ("Senior work*") OR TITLE-ABS-KEY ("Elder worker*") OR TITLE-ABS-KEY ("ageing work*") OR TITLE-ABS-KEY ("Cld* employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR TITLE-ABS-KEY ("senior employee*") OR TITLE-ABS-KEY ("Elder employee*") OR DAD (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ENGI") OR LIMIT-TO (SUBJAREA , "SOCI")). The process followed three main steps:

- 1. Defining the research scope and selecting key studies related to digital skills and senior workers.
- 2. Identifying publication trends through systematic literature review techniques.
- Examining digital training models designed to improve senior workers' digital fluency, employability, productivity and knowledge-sharing.

Beyond the analysis of academic literature, this study reviewed also managerial literature, to assess how digital skills impact senior workforce integration. This review provided insights into the corporate landscape, highlighting digital inclusion initiatives and training programs tailored for senior employees.

Stream of research

The systematic analysis indicates a growing interest in digital skills for senior workers, with an increasing number of studies published starting from 2010. The most influential journals include:

Authors	Title	Journal	Citations
Burke, R.J. & Ng, E.	The changing nature of work and	Human Resource	265
(2006)	organizations:	Management Review	
	Implications for human resource	•.0	
	management		
Taylor, P. & Walker,	Employers and older workers:	Ageing and Society	204
A. (1998)	Attitudes and employment practices	S S	
Finegold D.,	Age effects on the predictors of	Journal of	149
Mohrman, S. &	technical workers'	Organizational	
Spreitzer, G.M.	commitment and willingness to	Behavior	
(2002)	turnover		
Calzavara, M.;	Ageing workforce management in	International Journal of	146
Battini, D.,	manufacturing systems:	Production Research	
Bogataj, D.,	state of the art and future research		
Sgarbossa, F. &	agenda		
Zennaro I. (2020)			
Gist, M., Rosen, B. &	The Influence of training of method	Personnel Psychology	136
Schwoerer, C. (1988)	and trainee age		
	on the acquisition of computer skills		

Table 1: most cited paper on digital skills and older workers

Burke and Ng (2006) explore three main drivers of change – demographics, technology, and globalization – and their impact on the world of work. The goal of their research is to understand the reasons behind changes in work and how to leverage or cope with these changes. However, these factors are not independent of each other. For example, globalization is heavily influenced by technology, while the latter has advanced rapidly due to globalization and the increasing demand for economic efficiency.

Finegold et al. (2002), taking a more organizational approach, suggests that businesses should prevent the costs associated with employee turnover. Analyzing a sample of over 3,000 technical professionals from different generational groups, they observe that there are not significant age differences in terms of engagement, job satisfaction, and work-life balance.

Calzavara et al. (2020), well-known experts in the field of aging, offer valuable advice on age management and present a systematic literature review on the topic. She states that in recent years, there have been significant advances in studying the integration of workforce ageing with workplace and production process design. However, she highlights the need to address the ageing issue from an engineering and operational perspective, as these research areas remain underexplored.

Gist et al. (1988) were pioneers in the field of computer science, studying the influence of training in computer software skills on job performance through an innovative experiment.

Psychological research has indicated that certain abilities, like language skills, can improve with age (Cai & Stoyanov, 2016). However, other abilities, such as information processing speed, multitasking, memory, the ability to learn new skills and adapt to changes in work processes, as well as physical abilities like mobility, speed, endurance, and coordination, tend to decline with age (Phiromswad et al., 2022).

RESULTS

Overall, several concepts related to how senior workers approach and manage digital skills emerged.

A) Digital skills as a success factor in aging

Improving digital skills is essential for the process of successful aging, which refers to healthy and productive aging. In particular, the adoption of technologies can help keep senior workers active, connected, and engaged in their work.

Tailored upskilling practices ensure the sustainability of senior workers' employment, as they are effective in helping individuals adapt to the use of new technologies (Stojanova et al., 2019). New technologies, together with the evolution of the Industry 4.0, amplify the need to build specific skills, as they are increasingly replacing routine tasks at a faster pace, which characterize a large part of economic activities, regardless of industry or company size. Moreover, the demand for workers with high-level skills is continuously increasing, reducing opportunities for individuals with lower-level skills. The transformation of the labor market is taking place within the context of Industry 4.0, which requires advanced digital skills, leading to a reduction in routine jobs. The sustainable employment of senior workers must be supported by Industry 4.0, which should prepare workers to enhance their digital skills (Stojanova et al., 2019). Digital competence promotes social inclusion and participation, reducing the risk of isolation. Senior workers who acquire digital skills are more likely to remain employable, adapting to changes in the job market. In sectors that require the use of specific software, online platforms, and technological tools, digital skills are now essential to avoid being excluded from professional opportunities. According to the study by Lakomý (2023), workers with high digital skills have a 35% lower chance of early retirement compared to those with lower digital skills. This suggests that digital skills not only enhance employability but also influence the decision to stay active in the workforce for a longer period. Digital skills are often considered an asset by companies, which prefer to invest in workers capable of facing technological challenges. This means that older workers with these skills are seen as valuable resources and may have opportunities to remain employed longer. Digital skills also allow for greater autonomy, enabling workers to perform their jobs more efficiently and with less dependence on other resources or professional figures. This could influence the decision to not retire from work, as the work process becomes less strenuous.

B) Psychosocial Barriers and Stereotypes

One of the main psychological barriers for senior workers in acquiring digital skills is related to negative stereotypes about the use of technology by older people.

It is often believed that senior workers are less likely or capable of learning new technologies, but studies (Acemoglu & Restrepo, 2018; Berkowsky et al., 2017) show that the right approach, such as personalized training, can overcome these barriers.

The fear of being unable to adapt to technological changes can be a significant psychological obstacle (self-fulfilling prophecy). Managing these fears and offering psychological support and coaching can reduce digital anxiety, fostering greater openness to learning new skills. According to Kroon et al. (2018), older workers are generally perceived positively for their reliability but negatively for their digital skills.

However, this perception falls within the broader phenomenon known as the grey digital divide, which stems from the combined effect of organizational ageism, unequal training opportunities between senior and younger workers, and negative stereotypes (Lagacé et al., 2016).

Kroon (2018), through the application of the Stereotype Content Model (SCM) (Fiske et al., 2002), state that older workers are perceived as high in terms of reliability and loyalty (a dimension defined as "warmth"), but low in adaptability and technological skills (referred to as "competence").

These stereotypes lead senior workers to internalize negative perceptions about their own digital abilities, fostering an aversion to acquiring new skills, driven by a lack of motivation and self-confidence (Levy, 2009; Hampel & Kunze, 2023). This is a clear example of a stereotype that can limit professional growth opportunities for senior workers. While their experience and reliability are appreciated, the perception of poor technological skills can exclude them from roles that require the use of digital tools.

These stereotypes lead to a self-fulfilling prophecy, as emphasized by Hampel & Kunze (2023). If senior workers are perceived as less capable of adopting new technologies, this belief may become reality, as senior workers may feel demotivated and less inclined to learn new digital skills.

C) Training, Development, and Transfer of Skills

Training is a fundamental pillar for the improvement of digital skills among senior workers. Corporate training initiatives, online courses, and e-learning platforms can be tailored to the needs of senior

workers. Intergenerational training is another possibility where younger generations can help seniors better understand new technologies.

Senior workers are an important resource for the transfer of professional skills, and this can be combined with digital training. Technological mentorship and intergenerational exchange can facilitate adaptation to technology, reinforcing the sense of usefulness and belonging in the work context.

The fact that Taylor and Bisson (2022) emphasize the importance of these two factors implies that, for effective and lasting training, it is not enough to just provide educational content. It is essential that the environment in which learning takes place is supportive and that the organization actively supports participants, both in terms of resources and attitude.

The quality of the psychosocial environment in which training takes place is crucial for the effectiveness of training programs for older workers. When individuals feel safe and not belittled when making mistakes, they experience a learning climate that supports their growth (which has a positive impact on engagement and participation), reduces technology-related anxiety, and strengthens their self-confidence (Taylor & Bisson, 2022).

In particular, in the context of senior workers or those engaged in lifelong learning, the psychosocial environment can make a significant difference: psychological support and a climate that fosters trust can help overcome the fear of failure or anxiety about facing new technologies.

D) Adaptation Strategies and Digital Fluency

Adaptation strategies are crucial for improving the digital fluency of senior workers. Companies can support the integration of new technologies by leveraging gradual and personalized approaches. Techniques such as micro-learning or hands-on workshops can help senior workers acquire skills in a less stressful way.

Aisa et al. (2023) state that older workers manage digital transformation by adopting different strategies, based on their personal attitudes, career goals, and organizational context. The authors propose three distinct categories of strategies: • Avoidance: This strategy is common among workers approaching retirement and consists of continuing to use familiar tools while minimizing engagement with new technologies, thereby avoiding the complexity generated by the introduction of technologies different from those used in the past.

• Facilitation: Generally adopted by individuals who consider digital skills essential for their career longevity, this strategy involves actively embracing new technologies to enhance productivity and stay aligned with evolving job requirements.

• Specialization: This strategy characterizes individuals who aim to become indispensable to their organization by developing expertise in specific digital tools.

Digital fluency refers to the ability to not just use digital tools, but to navigate, adapt, and innovate with them in a way that enhances personal and professional effectiveness. It's more than basic digital literacy involves being able to critically assess, select, and use technology to solve problems, communicate effectively, and achieve goals. For senior workers, digital fluency is an increasingly important skill set, as more industries shift toward technology-driven operations. In this context, senior workers must embrace a continuous learning mindset and develop the confidence to interact with technology in ways that support both their personal and professional growth.

Digital fluency is a dynamic process that requires continuous learning in response to technological advancements: it is therefore not a static competence, but a dynamic one, evolving alongside technological innovations (Hampel & Kunze, 2023). Those who develop a high level of digital fluency ensure they remain valuable contributors in the workplace, as they enhance their employability, productivity, and knowledge sharing. Digital fluency opens up new job opportunities for senior workers by making them adaptable in an increasingly tech-driven world (employability). Many industries require at least basic digital fluency, and more advanced fluency can lead to leadership or specialized roles.

For senior workers, digital fluency is an essential skill that goes beyond basic computer literacy. It equips them with the ability to navigate digital environments, adapt to new technologies, and contribute effectively in the modern workplace. By focusing on building their digital fluency, senior workers can enhance their employability, productivity, and confidence, ensuring they remain valuable contributors to their teams and industries.

DISCUSSIONS

While many discussions on workforce development emphasize upskilling initiatives and strategies for adapting workplaces to modern needs, there is often a limited focus on addressing the specific challenges that senior workers face when it comes to acquiring digital skills. In today's increasingly technology-driven world, where innovation is rapidly reshaping industries and daily tasks, it is crucial that older workers are provided with the necessary support to navigate and succeed in the digital landscape. Many of these workers, who may not have grown up in the digital age, face unique barriers when trying to integrate technology into their daily work routines. As a result, their ability to remain competitive and productive in the workforce is at risk.

Digital fluency is no longer a luxury or a nice-to-have skill; it has become a fundamental requirement for success in most work environments. From basic communication tools to more specialized software, a wide range of technological skills are now needed across nearly all sectors. Without access to proper digital training and support, older employees may find themselves struggling to keep pace with their younger counterparts, resulting in decreased confidence, job satisfaction, and ultimately, productivity. The challenge is particularly pressing in industries such as manufacturing, where the rapid integration of advanced technology, automation, and data analytics has transformed traditional job roles. For many senior workers in this sector, these changes can feel overwhelming, especially when coupled with other factors, such as the aging workforce and the shifting dynamics of the global labor market. In addition to the digital divide, many manufacturing jobs have been moving to lower-cost labor markets, further eroding the stability of employment for workers who have spent years in the industry.

According to Haapala et al. (2022), these combined pressures—technological advancements, workforce aging, and the migration of jobs—have conspired to undermine the long-term job security of the modern manufacturing worker. As older employees struggle to keep up with the digital revolution, they may face greater challenges in maintaining their positions or finding new opportunities. Addressing the digital skills gap for senior workers is not only an issue of fairness, but also of economic necessity.

Employers, governments, and educational institutions must recognize the importance of providing accessible, tailored training programs that help older workers develop the digital competencies needed to thrive in today's economy.

Digital skills have become increasingly important for workers of all ages, and older workers are no exception. As the workforce evolves and technology advances, there are several key reasons why it's crucial for older workers to develop or enhance their digital skills: staying competitive in the job market or employability, improved efficiency and productivity, job retention and career growth – older workers who embrace digital tools have a better chance of remaining employed and advancing in their careers. Companies are more likely to retain employees who are flexible and eager to learn, as digital skills are often seen as a key asset for the future, bridging the generational gap because older workers who develop their digital skills may become important mentors for younger colleagues, helping to bridge generational gaps in the workforce, access to online learning and resources and personal empowerment and confidence. Beyond the professional advantages, developing digital skills can boost the personal confidence of older workers. They can access online services, manage finances, engage in social media, or stay in touch with family and friends through technology, all of which contribute to a sense of empowerment in daily life.

Overall, fostering digital fluency among older workers benefits both individuals and organizations. As technology continues to evolve, embracing digital skills is essential for lifelong learning, career advancement, and personal empowerment. Employers may not always provide the training and support needed to help older workers develop technological skills. In some cases, there may be a perception that older employees are less capable of learning new technologies, which can lead to a lack of investment in training. Additionally, older workers might not have the time or resources to invest in training outside of work hours. Older workers may feel intimidated by technology, fearing that they are too late to learn new skills or that it will take too long to adapt. This mindset can create resistance to change, making them less likely to embrace new tools or seek out learning opportunities. In some workplaces, there may be an emphasis on younger, tech-savvy employees, which can create an environment where older workers feel marginalized or excluded. This can further discourage them from developing their technological skills.

CONTRIBUTIONS AND FUTURE IMPLICATIONS

This study contributes to academic and managerial discussions by deepening our understanding of digital skills development and fluency for senior workers. From an academic perspective, it provides a foundation for future research on workplace training, digital inclusion, and workforce adaptability. From a managerial standpoint, the findings suggest that companies should invest in customized digital training programs to bridge skill gaps and facilitate digital engagement among senior employees. Furthermore, identifying key journals, authors, and thematic clusters allows practitioners to access relevant insights, shaping their digital upskilling strategies. Addressing the research gaps—particularly in integrating effective digital training models—enables organizations to foster a more inclusive and technologically adaptive workforce, ensuring that senior employees remain valuable contributors in an increasingly digital world.

Future studies should explore how businesses can implement age-inclusive digital training programs, leveraging technology to improve knowledge transfer, productivity, and professional engagement for older employees. Another stream of research that this article proposes to explore is the difference between crystallized and fluid intelligence and how these impact the employability and motivation of senior workers.

MANAGERIAL IMPLICATIONS

In today's context, technology is an integral part of almost all workplaces, and it is essential that older workers receive the necessary support to adapt to digital technologies, even if they did not grow up with them. Digital skills are crucial for maintaining productivity and staying relevant in the workforce. Digital skills have become increasingly important for workers of all ages, and older workers are no exception. With the evolution of the workforce and the advancement of technology, there are several reasons why it is crucial for older workers to develop or improve their digital skills: staying competitive in the job market and enhancing employability, improving efficiency and productivity, maintaining their job, and growing professionally.

For older workers to successfully adapt, employers can create a supportive environment that fosters learning and growth. Some ways to do this include:

- Tailored Training: Offering training programs specifically designed for older workers, focusing on their learning pace and providing accessible resources.
- Flexible Learning: Offering both online and in-person options so workers can learn at their own pace and comfort level.
- Patience and Encouragement: Encouraging a culture of patience, where older workers are not rushed but supported as they gain confidence in new technologies.

While older workers may not have grown up with digital tools, they have valuable experience and skills that can be enhanced through technology. By focusing on key digital competencies and providing the necessary support, older workers can remain valuable contributors in today's digital world. Continuous adaptation and a willingness to learn will empower them to thrive in increasingly tech-driven workplaces. Building digital capital and enhancing digital skills is essential for senior workers who want to stay competitive in the workforce and adapt to the digital age. By investing in these areas, senior workers can increase their job satisfaction, improve their career prospects, and continue contributing meaningfully to the workforce.

FUNDING SOURCES

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT in order to help in the translation of some conceptual messages from Italian to English. After using this tool/service, the author(s) reviewed and edited the content as needed and took full responsibility for the content of the published article.

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