Older Workers and Work Exit Preferences in a Digitalized Working Life[1]

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ABSTRACT

With working life being in the middle of both a demographic and a digital transition, a key question is whether digitalization may counteract the policy goal of delaying work exit. Here, we use survey data from the Norwegian Senior Policy Barometer to investigate the association between how digital tools are experienced and the preference for timing of work exit. We find that, even after controlling for various potential confounders, experiencing digital difficulties at the workplace is correlated with preferring to leave work early. A relevant follow-up question is then which factors increase the likelihood among older workers of experiencing such difficulties. The analyses show that workplace conditions are more important than individual characteristics, suggesting that efforts taken to reduce experiences of digital difficulties at the workplace could be effective in preventing early exits.

Introduction

Working life is currently in the middle of both a demographic and a digital transition. The demographic changes are altering the balance between the old and the young, meaning that the share and number of workers approaching retirement are increasing, whereas the share and number of young recruits on the verge of entering the labor market are decreasing. The trend is predicted to escalate in the coming years, thereby intensifying the need for older workers to extend their working life by postponing retirement (OECD 2020). At the same time, digital technologies have become more and more essential for achieving business goals (Nylén & Holmström 2015), and a wide specter of industries, including schools and health care, are increasingly required to use

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a broad variety of digital tools (Glauner et al. 2021; Håkansson Lindqvist & Pettersson 2019). According to a report from the European Commission (2016), more than 90% of workplaces in Europe employ different types of digital technologies, and a recent OECD publication states that most workers will need to adjust their skills to the digital transformation of work (OECD 2019).

The digital development may have different effects on younger and older workers due to different basic skills (Battisti & Gravina 2021; Blanas et al. 2019; Rutledge et al. 2020). Older age groups may be more at risk of struggling to keep pace when technological changes are accelerating since they grew up without internet and digital devices (Prensky 2001). Hence, older workers may be exposed to greater challenges than younger age groups, as learning new procedures requires the unlearning of prior routines (Becker 2010). If this premise is correct, working life, at least in the immediate future, could face a possible mismatch between an increasing demand for older workers and an increasing demand for digital competence.

Of course, younger age groups may also have difficulties in learning and using new digital technologies. However, addressing older workers' experiences is of particular interest, as they, unlike younger workers, have a greater option of leaving the workforce. To avoid constantly having to learn and master new technologies, older workers who are struggling with digitalization can choose retirement over continued work participation. Hægeland and colleagues (2007) did in fact find a higher probability of transitioning to retirement for older workers (aged 60 and older) in workplaces that introduced new process technologies. Hence, experiences of digital difficulties could counteract a postponement of work exit, which has become a key policy goal in most aging societies. The aim of the present study is therefore to investigate whether digital challenges are associated with a preference for leaving work early. More specifically, we ask: Do older workers who experience digital tools that are hard to learn, prefer to retire earlier than those who do not experience such difficulties? If this is the case, we further ask: Which factors increase the likelihood of experiencing digital difficulties? Are factors at the individual level or the workplace level more important? Answers to these questions represent valuable knowledge that may help tailor measures directed at combatting early work exit. The analyses are based on survey data from workers aged 50 and older participating in the Norwegian Senior Policy Barometer (2020 and 2022).

Background

Digitalization contributes to the accelerating changes in social and technical processes in modern societies. According to Rosa (2013), social acceleration is central to modernization itself – with wide implications, not only for working life. Digitalization has beneficial consequences that carry growth and improvements in many ways, but there are also potentially severe negative side effects, not least increasing social inequality and the marginalization of older citizens. Even if digitalization and new communication technologies are 'connecting people', to use Nokia's slogan, some are left behind in what is referred to as the 'digital divide' (e.g., Cullen 2001) or the 'gray divide' (Friemel 2016).

Older age groups are typically assumed to possess more limited digital competence compared to younger people, simply because they grew up before the world became digital. Consequently, they have been described as 'digital immigrants' in a world of

younger 'digital natives' (Prensky 2001), alluding to cultural differences between older and younger birth cohorts. These contrasts may contain barriers against the integration of older people into the digital world, in society at large and at the workplaces. Such barriers are encompassed in concepts like 'digital ageism' (Chu et al. 2022; Manor & Herscovici 2021) and 'AI ageism' (Stypinska 2022).

In addition to the above-mentioned cultural gap, algorithms and datasets may be age biased by stereotypes and prejudices of the designers of digital tools, who are most often young men (Stypinska 2022). Digital platforms of corporations have in fact been described as explicitly or non-explicitly ageist in a way that limit the digital participation of older people (Rosales & Fernández-Ardèvol 2020). Consequently, older workers and older job applicants may enter the competition for jobs or advancements with constraints stemming from a lack of up-to-date digital competence.

Moreover, older workers may be victims of age stereotypes baked into the digital structures and into employers' ageist attitudes. In fact, employers' and managers' attitudes towards older workers' technological skills are revealing a rather consistent skepticism. For example, Sharit et al. (2009) found that only 3% of the managers in their US survey believed that older employees fare better than younger employees on technological skills. A cross-national study of employers indicates a clear preference for workers under 35 years of age relative to 50-year-olds and older when evaluating employees' capacity to deal with new technology (Van Dalen et al. 2009). Recent data from Norway show that among managers in Norwegian organizations, 62% agree that younger workers are preferred when new digital applications and new working methods are introduced (Ljunggren et al. 2021). Furthermore, a majority (55%) agree that workers above 50 years of age are less able than younger workers to get to grips with new digital technologies (Dalen 2015).

Digitalization may demotivate older workers, and consequently, accelerate the retirement process. However, digital systems are clearly only one among numerous factors potentially influencing the timing of work exit. In the research literature on the work-retirement transition, reasons for early or late work exit are typically categorized under various headings, such as individual attributes (e.g., health, education), job and organizational factors (e.g., physical and mental workload, social environment, autonomy), family factors (e.g., retirement of the spouse, family obligations), and socioeconomic context (e.g., labor market, pension plan) (Wang & Shi 2014). The impact of digital technologies may result from a combination of elements of job and organizational factors (digital demands), and individual attributes, like education and digital skills.

In another classification, factors influencing the timing of retirement are grouped into five categories: push, pull, jump, stay, and stuck (e.g., Andersen et al. 2020). *Push* refers to factors within working life that are pushing senior workers out, like poor work environment, poor working conditions, the supervisor's lack of interest in the worker's contributions, lack of challenging tasks, or lack of autonomy. *Pull* covers factors outside the job stimulating workers to quit, such as generous pensions, a retired spouse, or a desire to slow down. *Jump* indicates that the worker decides to start a new career outside the paid labor market, for example, as a voluntary worker, or becomes absorbed in a leisure activity. *Stay* refers to factors at the workplace that motivate the worker to continue, such as congenial colleagues, interesting tasks, a good salary, flexible working schedules, training options, and new challenges. Finally, the fifth group of factors is called *stuck*, denoting a situation where the workers have poor options of leaving due

to strict pension rules, or insufficient pension rights, or that the senior worker cannot afford to suffer the loss of income from paid work due to family dependents, financial obligations, or costly consumption.

Digital technologies that are perceived as difficult to learn may be regarded as a push factor, causing stress, feelings of insufficiency, or incompetence that the worker may want to escape by opting for an early exit. In addition, managers may prefer that older workers who have problems with learning new technologies decide to retire as early as possible. Thus, a preference for early retirement may be a consequence of workers' feelings of insufficiency, as well as a perception of how managers evaluate their digital competencies and ability to learn.

Studies addressing factors influencing the timing of retirement have consistently concluded that poor health increases the risk of an early exit (Blekesaune & Solem 2005; Topa et al. 2018), while high education predicts fairly late exits (Riekhoff & Kuitto 2022). Regarding workplace characteristics, a Nordic review of the impact of working environment on the retention of older workers found nine well-documented factors influencing the timing of work exit: occupational accidents, whole-body vibrations, physical work demands, quantitative work demands (e.g., time pressure), autonomy, leadership support, conflicts at work, job satisfaction, and age discrimination (Poulsen et al. 2017). The relative strength of these factors is not established and is expected to vary according to the type of work.

Possible effects of digitalization are not included among the factors in the Nordic review referred to above, presumably because of the lack of studies addressing this issue. A recent review of studies on older workers in digitalizing workplaces concludes with 'a Janus-faced situation' – older workers may experience both challenges and opportunities (Komp-Leukkunen et al. 2022). New digital technologies tend to reduce the demand for older workers (Behagfel et al. 2014; Greenan & Messe 2018), particularly in sectors with a high speed of changes and a constant need for new skills (Brooke 2009). At the same time, new technology can be a tool to facilitate older workers' participation in the workforce (Nagarajan & Sixsmith 2021), for example, by easing physical strain and providing relief from monotonous, routine tasks.

Taken together, research on predictors for the timing of retirement has revealed a wide range of significant factors, but there is relatively little knowledge about the possible impact of digitalization. Moreover, digitalization processes are likely to have different effects within the group of older workers, depending on both individual and workplace factors, an issue that has been addressed to only a limited extent in research so far (Komp-Leukkunen et al. 2022). Hence, the present study will contribute not only to better knowledge of the importance of digitalization for early exit preferences, but also to a broader understanding of the factors that may influence older workers' experiences of digital difficulties at the workplace.

Data and method

To answer our research questions, we use data from the Norwegian Senior Policy Barometer (NSPB). The data collections for the barometer (computer-assisted telephone interviews) have been carried out regularly since 2003 among occupationally active individuals, that is, individuals with income from full-time or part-time work (Folkenborg

et al. 2022). Here, we use data from the last two waves, conducted in 2020 and 2022 and pooled into one single file. Each wave includes a nationally representative sample of around 3000 occupationally active men and women.

For our analyses, we select workers aged 50–64 years. The lower age limit was selected to include workers of a certain age, as their preferences about the timing of their work exit may be more realistic compared to those of younger workers. The upper age limit was set to 64 because we wanted the respondents to be below the average retirement age in Norway, which currently is approximately 65 (Bjørnstad 2019; Lien 2022). Furthermore, we restricted our sample to workers employed in four industries – education, public administration, banking/finance, and business services. The selection was made to increase the likelihood that the respondents work in digitalized workplaces. A last requirement was for the respondents to have specified a preferred age for retirement (which 94% of our sample of 50 to 64-year-olds in the selected four industries had done). This leaves us with an analytical sample consisting of 720 respondents.

Dependent variables

The first research question is whether older workers who experience digital tools that are difficult to learn, prefer to retire earlier than those who do not experience such difficulties. To answer the question, we perform analyses with a dependent variable indicating the respondents' preferred work exit age. The variable is measured by an open-ended survey question: 'At what age would you prefer to leave working life altogether if you could choose freely?'. The range of ages given is reduced to a binary variable, with preferring to work to at least 65 years of age (the average exit age in Norway) as 1 and envisioning leaving work before turning 65 as 0.

Although 'preferred exit age' cannot be considered an exact proxy for the actual timing of retirement, such preferences are still found to predict work exit age fairly well (Solem et al. 2016; Tuominen et al. 2012). Obviously, for workers in their 50-ies, a perfect prediction of work exit age 10–15 years later is quite unlikely. However, having knowledge of preferences ahead of the actual retirement, and how these vary with individual and workplace characteristics, may help to recognize factors influencing the final decision.

Our second research question is which factors increase the likelihood of having digital difficulties. The dependent variable in this part of the analyses is the respondents' experience of facing digital difficulties at work, and we use the following survey question as our measure: 'To what extent do you in your work experience digital tools that are difficult to learn?'. We dichotomized the replies into a binary variable where 1 includes the answer categories 'to a great extent' and 'to some extent' and 0 'to a small extent' and 'not at all'. This variable is also our main *independent* variable in the first analysis.

Independent variables

To investigate if experiencing digital challenges at work is associated with an earlier preferred exit age, we need to control for potential confounders, that is, variables that

may be related to both the dependent variable (i.e., work exit age preferences) and the independent variable (i.e., the experience of digital tools that are hard to learn). There is extensive research on factors that have an impact on the (preferred) timing of retirement, which is discussed in the background section. The NSPB covers several of these variables, both individual characteristics (gender, age, education, and health) and workplace characteristics (industry, participation in training, and psychosocial work qualities). Factors determining the experience of digital tools among older workers is a far less researched area. However, we consider the individual and workplace characteristics listed above to be potential candidates for exhibiting such influence, and we therefore include them as control variables in the first set of regression analyses (Table 2). In the second set of regression analyses (Table 3), we will in fact explore their importance for the experience of digital difficulties.

For gender, male is coded 1. We divide our age span (50–64) into four equal three-year age groups that are included as dummy variables, with the youngest age group (50–52) as reference category. By using dummy variables instead of a continuous age variable, we can identify, not only if age has an effect, but which age groups that differ from one another. Education is the respondents' highest level of education, with university or college education coded 1 and lower levels coded 0. To measure health, we use a survey question asking for the respondents' subjective evaluation of their health status, which we have transformed into a binary variable with excellent or very good health coded 1. The four industries (education, public administration, banking/finance, and business services) are included as dummy variables, with education as reference category. For participation in job-related training, respondents answering yes to a question on whether they have participated in such training within the last twelve months are coded 1. The three psychosocial work environment variables are measured by the following questions: 'To what extent do you in your work experience…' '… hectic and stressful work?', '… organizational changes and restructuring?', and '… new competence demands?'. All three are made into binary variables, with answer categories 'to a great extent' and 'to some extent' coded as 1 and 'to a small extent' and 'not at all' coded as 0.

The ordinal variables (i.e., education, health, and psychosocial work environment) have varying numbers of value categories. By turning these variables into dichotomies, we make the coefficients in the regression analyses more easily comparable. Furthermore, we avoid treating the variables as having linear effects or assuming that their value categories represent equal increments of the underlying attributes.

Regression models

We use linear probability models (LPMs) in our regression analyses, despite having dependent variables with only two values. The statistical objections to using linear models when the dependent variable is binary have been shown to have little practical significance (Hellevik 2009), and they are preferred to non-linear models, as they offer the advantage of providing results that are easier to interpret than for example logistic regression does.

Results

Descriptive statistics

Our sample of older workers aged 50–64 years and belonging to four industries (education, public administration, banking/finance, and business services) includes more women than men (61% vs. 39%) (Table 1). The age distribution ranges from 24% for the youngest age group (50–52) to 12% for the oldest (62–64). A large share, 82%, have higher education, which can be attributed mainly to our selection of industries where most of the jobs require a university or college degree (Statistics Norway 2020). About six out of 10 (61%) consider their health to be either excellent or very good. As for work characteristics, 73% of our sample work in the two industries that are primarily situated in the public sector – education (40%) and public administration (33%) – whereas 27% work in the two industries belonging mainly to the private sector – banking/finance (14%) and business services (13%). The distribution between public and private sector

Table 1 Descriptive statistics

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Male	39
Age:	
50–52	24
53–55	23
56–58	21
59–61	20
62–64	12
Higher education (university/college)	82
Excellent/very good subjective health	61
Industry:	
Education	40
Public administration	33
Banking/finance	14
Business service	13
Participated in training last 12 months	59
Experiencing at work (to some/great extent):	
Hectic and stressful work	69
Organizational changes and restructuring	71
New competence demands	77
Digital tools that are difficult to learn	35
Preferred retirement age 65 or older	67

Percent (N = 720).

is reflected in the gender distribution, as the gender segregation between sectors is substantial in Norway (Kjeldstad & Nymoen 2012). In 2020, 70% of public sector workers were women, while 64% of private sector workers were men (Fløtre & Tuv 2022). In our sample, 59% report having participated in training within the last 12 months. The respondents' evaluation of their psychosocial work environment shows that 69% perceive their work as hectic and stressful to some or to a great extent, 77% perceive that their work demands new competence to some or to a great extent, and 71% perceive their work to be characterized by organizational changes and restructuring to some or to a great extent. Finally, for our two main variables of interest, a little over one-third of the sample (35%) experience digital tools that are difficult to learn at work to some or to a great extent, while approximately two-thirds (67%) prefer to retire at age 65 or later.

Experience with digital difficulties and preferred work exit age

To answer our first research question – whether having digital challenges at work increases the likelihood among older workers of wanting to retire earlier – we start with the bivariate association between the experience of digital difficulties and preferred exit age. Figure 1 shows that older workers who experience difficult digital tools tend to prefer an earlier work exit than those who are less, or not at all, exposed to such difficulties. More precisely, older workers experiencing digital tools that are hard to learn are more likely to prefer to exit at 64 or younger than those who only experience digital difficulties to a small extent or not at all (41% vs. 29%), and they are less likely to prefer to stay until 67 or later (30% vs. 42%) ($p = 0.002$). Mean preferred age for work exit for the two groups is 65.3 years and 66.0 years respectively (significant at 0.05).

Figure I Preferred age for work exit among older workers (aged 50–64), depending on whether they experience difficult digital tools to a great or some extent, or to a small extent or not at all. Percent (N = 720).
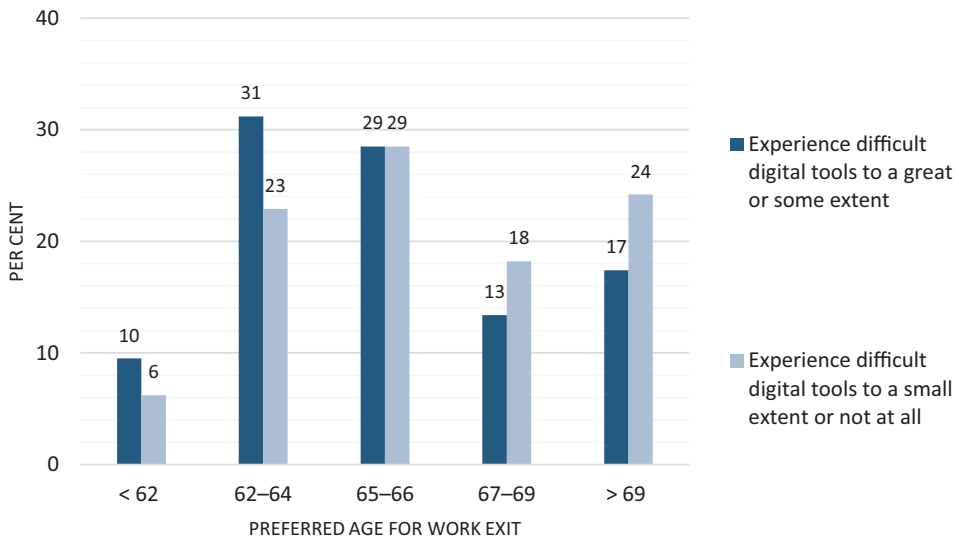
In the regression analyses in Table 2, we investigate if the bivariate association between experiencing digital difficulties and preferred retirement age remains statistically significant when we control for individual and workplace characteristics. The dependent variable is preferring to work until at least age 65. It turns out that even in the full model, with psychosocial work qualities included (model 4), experiencing digital tools that are difficult to learn at work still has a significant negative effect on the wish to work until 65 or older in our sample.

Of the control variables included in the analyses, being male, being close to age 65 (i.e., 62–64 years old), considering one's health to be very good or excellent, and having participated in training within the last 12 months increase the likelihood of preferring to work until 65 years of age or later. Gender loses its significant effect in model 3, which means that the variables added at this point help to explain why men are more likely than women to prefer an exit after age 65. Educational level, industry, and the three psychosocial work characteristics have no significant effects.

Table 2 Preferring to work until at least age 65 depending on the experience of difficult digital tools at work (linear probability models, unstandardized coefficients)

	Model 1	Model 2	Model 3	Model 4
Experiencing digital tools that are difficult to learn at work (to some/great extent)	−0.116**	−0.104**	−0.098**	−0.091*
Male		0.071*	0.070	0.064
Age (ref. 50–52)				
53–55		0.015	0.010	0.011
56–58		−0.053	−0.056	−0.061
59–61		0.044	0.051	0.048
62–64		0.230***	0.224***	0.218***
Higher education (university/college)		0.080	0.081	0.090
Excellent/very good subjective health		0.135***	0.128***	0.127***
Industry (ref. education)				
Public administration			0.020	0.023
Banking/finance			0.079	0.080
Business service			0.036	0.034
Participated in training last 12 months			0.096**	0.096**
Experiencing at work (to some/great extent):				
Hectic and stressful work				−0.027
Organizational changes and restructuring				−0.032
New competence demands				0.005
Constant	0.709***	0.500***	0.424***	0.457***
Adjusted R^2	0.012	0.066	0.073	0.071
N	720	720	720	720

Controlled for individual and workplace characteristics.
***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

Factors increasing the likelihood of having digital difficulties

Since the experience of digital difficulties remains statistically significant for preferring to work until at least 65, after controlling for our potential confounders, we turn to our second research question: Which individual or workplace factors increase the likelihood among older workers of experiencing digital tools that are difficult to learn? We perform several regression analyses. The first model includes only gender and age as independent variables (model 1, Table 3); in the next, we add educational level and subjective health (model 2), then industry and participation in training (model 3), and finally, we include psychosocial work qualities (model 4).

   It turns out that neither gender nor age have significant effects in any of the models. This means that workers in the beginning of their sixties are not more likely than those in their fifties to experience digital tools that are hard to learn. Additional analyses (not shown here) including also younger age groups (30–39 and 40–49 years) and older (65 years and older) reveal similar results (i.e., no age differences). Furthermore, we find no significant effect of educational level. Health, on the other hand, matters: Respondents

Table 3 The experience of difficult digital tools at work, depending on individual and workplace characteristics (linear probability models, unstandardized coefficients)

	Model 1	Model 2	Model 3	Model 4
Male	−0.035	−0.033	0.009	0.031
Age (ref. 50–52)				
53–55	−0.001	−0.003	0.028	0.013
56–58	−0.006	−0.007	0.012	0.026
59–61	0.027	0.027	0.031	0.031
62–64	0.027	0.025	0.039	0.073
Higher education (university/college)		0.019	−0.031	−0.085
Excellent/very good subjective health		−0.095*	−0.084*	−0.082*
Industry (ref. education)				
Public administration			−0.153***	−0.156***
Banking/finance			−0.198***	−0.200***
Business service			−0.245***	−0.220***
Participated in training last 12 months			0.014	−0.004
Experiencing at work (to some/great extent):				
Hectic and stressful work				0.050
Organizational changes and restructuring				0.155***
New competence demands				0.130**
Constant	0.358***	0.401***	0.506***	0.300***
Adjusted R^2	−0.005	0.002	0.032	0.079
N	720	720	720	720

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

who consider their health to be excellent or very good are significantly less likely to report difficulties with digital tools compared to respondents with poorer health. Overall, with all individual factors included in the analysis (model 2), very little of the variance in the dependent variable is explained. In contrast, the workplace variables have more explanatory power. For industry, individuals working in education stand out by being more inclined to report experiencing digital difficulties than those working in the other three industries (additional analyses not shown in Table 3 reveal no significant differences between these last three). Two of our three psychosocial work characteristics are also significantly associated with experiences of digital difficulties: work that demands new competence to a high degree and work with a high degree of organizational changes and restructuring go together with a higher likelihood of experiencing digital tools that are hard to learn. On the other hand, an expectation that participation in training would reduce the likelihood of experiencing digital difficulties does not bear out. However, it is important to keep in mind that the question does not specify type of training, which could be in relation to various competences other than digital skills.

Discussion and conclusion

We set out to investigate whether experiencing digital tools that are difficult to learn at the workplace is associated with a preference for an early work exit (before age 65, which is the average exit age in Norway). The results of our analyses, based on Norwegian data, indicate that this is indeed the case, even when controlling for relevant, and potentially confounding, individual, and work-related variables. The difference between the average preferred exit age of workers who are exposed to such difficulties and those who are not is statistically significant.

Characteristics contributing to a preference for late exit (at 65 or later) include an age close to the 65 years edge (i.e., 62–64), being male, having excellent or very good health, and having participated in job-related training during the last 12 months. Neither educational level nor industry (among the four included) are associated with the preferred age for work exit. The same is true for the variables related to work environment. Perceiving the work as hectic and stressful, undergoing organizational changes and restructuring, or experiencing new competence demands do not seem to make a difference for work exit age preferences.

Given the results of our first analyses, we wanted to investigate which individual and workplace characteristics that increase the likelihood of experiencing digital difficulties. We looked at both individual characteristics and workplace conditions. Within the age range of this study (50–64 years of age), we did not find any effect of age: workers in the beginning of their sixties were not more likely to experience difficult digital tools, than those in the beginning of their fifties. Additional analyses, including a wider age range (30–64), showed that they did not differ from workers in their thirties or forties either, confirming the absence of an age effect on the experience of digital tools that are difficult to learn. Nor were workers aged 65 years and older more likely to experience such difficulties. The lack of an age effect indicates that difficulties in learning digital tools may be primarily due to the complexity of the tools – meaning that the digital tools are difficult to learn, and not that older workers are less well equipped to learn new technology compared to younger age groups.

The lack of an age effect may seem in conflict with the above-mentioned concepts of 'gray divide' (Friemel 2016) and 'digital ageism' (Manor & Herscovici 2021). However, many older workers have been involved in digital changes at the workplace for several years and have had to regularly learn new tools (Grødem 2020). Besides, as emphasized by Nagel (2020), older workers need to be digitally skilled to extend working lives. This may be described as a 'digital worker effect'; that those who are still working at high ages represent a selected group of digitally competent workers. Thus, the lack of an age effect could be compatible with a push effect of digitalization.

Our finding that educational level does not seem to matter indicates that the experience of digital difficulties may be more related to the tools than to potential learning difficulties among aging workers. The higher educated are just as likely as the less educated to experience, or not to experience, digital difficulties at work. It should be added though, that due to the industries selected for our analyses, the share of respondents with higher education is considerable. A sample with more educational diversity might have yielded a somewhat different result concerning the effect of educational level on the experience of difficult to learn digital tools.

Poor health increases the risk of experiencing digital tools that are difficult to learn, which may indicate that having health issues hampers the opportunity to cope with new digital tools. If the training requires extra energy and effort, poor health may restrict the possibilities of engaging in new learning in addition to fulfilling the already established daily tasks. In such cases, it may be of particular importance that the training in new digital tools takes place at the work site, hands-on, as part of performing the job (Lee et al. 2009; Staufer 1992).

Potentially more disconcerting is the finding that participation in training seems to have no effect on the experience of difficult tools. However, as already mentioned, the training is here not specified to learning digital tools but includes all kinds of training organized by the employer. Another explanation for the lack of effect could be that while job training in digital devices is likely to have positive consequences for its participants, having to use digital tools that are challenging might also increase the likelihood of participating in such training.

 Among the four industries included in our analyses, respondents working in education are the most likely to encounter digital tools that are difficult to learn in their job. As described above, the reason behind our selection of industries for this study is that they are characterized by extensive usage of digital tools, which was further expanded during the COVID-19 pandemic (Folkenborg et al. 2022), not least within education. When schools were fully closed, all teaching had to be performed using digital tools, and when partly open, hybrid solutions were employed, with some students present in the classroom and others at home. Thus, working as a teacher not only involved increased use of digital tools, but also different methods of teaching and communicating with students. Such changes might have amplified the risk of encountering digital tools that are difficult to learn, and more so than in banking, business services or public administration, where the main adjustment involved working more, or exclusively, from home using various digital solutions.

Of the psychosocial work environment variables included in the analyses, organizational changes and restructuring, and new competence demands, increase the proportion of older workers experiencing difficult to learn digital tools. One likely explanation for these associations is that such changes and new demands in many cases involve new

digital technology. Even when not involving new technology, all forms of restructuring and new competence demands require effort and use of time for the individual worker, and learning digital tools may therefore be set aside or be given less attention. In times of change, offering options for digital training may be particularly important, and especially for older workers who may be less digitally accustomed.

When digital tools are difficult to learn, there are various approaches to alleviate the difficulties. One is to improve access to digital tools by designing them with a better interface and procedures that are easier to acquire. Another approach is to reduce the occurrence of frequent replacements of digital platforms. Perhaps more important is to improve the quality and quantity of training in the application of new tools, with attention to teaching methods adjusted to older workers (Morris & Venkatesh 2000). Even if older workers attend training less often than younger workers, there are signs of motivation among older workers to learn to use new digital devices. In one of the most digitally exposed professions, teaching and education, employees seem to be particularly motivated to acquire better knowledge and skills to improve the coping with new digital devices, a motivation that, in a recent Norwegian study, is expressed by both older and younger teachers (Gudmundsdottir & Björnsson 2021). In other professions as well, employees seem ready to learn more. For example, older health care workers in hospitals in Norway found new technology and digital tools motivating and professionally challenging, but still, one out of four reported that the training offered was insufficient (Midtsundstad & Nielsen 2022). By providing suitable digital training, and pursuing less complicated digital solutions, employers may contribute to rendering digitalization more of a stay factor than a push factor.

Considering all possible factors that may play a role for work exit preferences (e.g., health, working conditions, family situation, pension system, and leisure activities), one should perhaps not expect experiences of difficult digital tools to make much of a difference. Nevertheless, the results presented in this article show that this does seem to be the case. It should, however, also be noted that a certain proportion of older workers experiencing such difficulties still prefer a late exit. One interpretation is that when difficult digital tools incite early exit, other factors, for example, related to the work situation, may encourage a late exit and overrule the (negative) effects of difficult digital devices. Another possible interpretation is that digital tools that are hard to learn may represent challenges for some workers, and challenges may stimulate energy and motivation to cope with the digital tools. Thus, digital challenges may in some cases tie the worker closer to the job, particularly if the worker is supported with learning options to cope with digital devices that are potentially difficult to master. Future research should look closer into the possible different effects of digitalization, including both negative push effects and positive stay effects, on work exit among various groups of older workers.

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