

OPPORTUNITIES FOR OLDER EMPLOYEES DURING THE FOURTH INDUSTRIAL REVOLUTION

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Abstract: *Given the fact that worldwide the ageing population continues to reach new peaks, there is a pressing need to explore if the labour force frame can be extended for older employees reaching 65 and beyond. Mandatory age retirement dominated the previous Industrial Revolution. From this point onwards, the Fourth Industrial Revolution will question for sure if a potential context for facilitating longer careers is necessary on one hand or if postponing retirement is realistic on the other hand or not. The present article explores in some manner certain answers to these questions by taking into account the rise of flexible work arrangements and their daily impact and by also taking into account the changes visible today when it comes to work-related skills.*

Key words: *older employees, the Fourth Industrial Revolution, retirement, work-related skills.*

1. Introduction

Population all over the globe is ageing. It is expected that by 2050 the number of individuals over 65 years of age will reach 16% (United Nations Department of Economic and Social Affairs, Population Division, 2022), a significant growth compared to previous centuries. For instance, at the beginning of the 20th century in the United States of America, the number of individuals over 65 years of age was 4% (Ferrucci, Giallauria & Guralnik, 2008). Since older adults are a growing age category, it is important to understand the dynamic of this specific age group as a potential working force and to analyse the labour market opportunities within the present context. Since the beginning of the First Industrial Revolution numerous work challenges, risks, work conditions, public work policies, professional roles, job demands, and core skills, have undergone a lot of changes through the years up to present. Thus, it is important to analyse older adults as a potential working force in the actual context of the Fourth Industrial Revolution.

Beforehand, it is necessary to mention that the word “older employee” is used more

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broadly than the word older adult. Within the present article references will be made to adults 65 years old and over, even though in other studies older employees were referred to employees aged 50 and over by research choice (Biletta et al., 2021; Kooij et al., 2008).

In the preindustrial era, at the age of 65, most adults were still working to some degree, since paid retirement from retirement funds was non-existing. Retirement became a possibility after the Industrial Revolution, this changed the proportion of employed older adults (Zickar, 2013). In order to better see the differences in older adults' employment from the preindustrial era to the 20th century, the next example could be revealing: during the Third Industrial Revolution, in Belgium, no men of the age of 69 years was working in the first half of the 90s (National Research Council, 2001). In this view, employees have shifted from no retirement at old adulthood, in the preindustrial era, to mostly all older adults being retired at the end of the 20th century.

At the beginning of the 21st century, the Fourth Industrial Revolution started (Schwab, 2016). During this time, another change was visible: older adults were more likely to be seen as a potentially resourceful labour force (Shultz & Olson, 2013). The age of retirement, from the beginning of the 20th century up to the present, started to resemble a U shape: was high at the beginning of the 20th century, then it decreased, and now it started to increase again (Cahill, Giandrea & Quinn, 2015). It is estimated that by 2030, 32% of older adults between the ages of 65 and 74 will be employed and 11.7% of older adults aged 75 or more will be employed in the United States of America (U.S. Bureau Of Labour Statistics, 2021). This new approach regarding older adults as a labour force is recently supported by active ageing and flexible retirement policies in many European countries (Foster & Walker, 2015; Rodriguez-Rodriguez et al., 2017; United Nations, 2002) and not only. Although this new approach to older adults is supported by economic arguments (Foster & Walker, 2015), there are more reasons that can be related to the changes facilitated by the Fourth Industrial Revolution.

2. Flexible Work Arrangements and older Employees

During the Fourth Industrial Revolution one of the developments is related to telepresence (Burgess et al., 2021) which describes remote work, where work related tasks can be fulfilled without being physically present in a specific job location due to the increased development of technology. It is estimated that in 2020, 39.6% of Europeans from the European Union worked remotely (Eurofound, 2020), and it is estimated that the use of teleworking will increase for many jobs in the future (World Economic Forum, 2020). This type of work arrangement may benefit older employees over the age of 65 (Patrickson, 2002) since it increases the work opportunities, keeping in mind that age increases the risk of physical limitations, and a decline in performing complex physical activities as well (Berlau, Corrada & Kawas, 2009; Forte & Monteiro, 2022; Wan & Wong, 2014). About 27% to 40% of older adults may have some physical limitations (Courtney-Long et al., 2015; Musich et al., 2018), making the commute to work challenging for some older employees. Therefore, it may not be a surprise that having a hard commute is associated with the decision to retire (Tavares, 2017).

Not all the older employees may benefit from the emergence of remote working or teleworking. At present most of the employees that benefit from this type of work arrangements are mainly white-collar representatives, with tertiary education, mainly in the fields of information technology, insurance, management, education, architecture, design, art, entertainment, legal, etc. (Pabilonia & Vernon, 2022; World Economic Forum, 2020). COVID-19 pandemic increased also the availability of this type of work arrangement for white-collar with low or middle education levels (e.g. administrative workers) since the number of employees engaging in this type of work ascendent since pre-pandemic times (Lodovici et al., 2021).

The flexibility of work arrangements, in general, is an important element that changed the perspective of older employees towards continuing work longer (Morelock, McNamara & James, 2017; Vanajan, Bültmann & Henkens, 2019). Work arrangements refer not only to time elements (e.g. part-time, job share) or spatial changes (e.g. teleworking, homeworking), but also to work-roles modifications that can be operated in this view (e.g. less demanding responsibilities) (Atkinson & Sandiford, 2015). Some of the major benefits, from the older employees perspective may be associated with an increased autonomy and control in terms of execution pace concerning job-related tasks or the workload, better work-life balance, a higher potential to separate negative stereotypes related to age and work performance (Dropkin et al., 2016; Lodovici et al., 2021) and lower stress levels (Chandola et al., 2019). The flexibility of work arrangements is facilitated by changes in the approach of older ages in general, both at social and political levels. There are a lot of voices calling for a change in the mandatory retirement age, in the direction of its abolishment, taking note that this process has already been put to practice in some countries such as the United Kingdom and the United States of America (Blackham, 2021; World Health Organization, 2015).

3. Core work-related Skills within the Fourth Industrial Revolution

Performing tasks that require a high level of physical demand may be problematic for an employee aged 65 or more. It is known that old age is associated with a gradual decrease in many physical areas and fitness, as a common natural ageing process feature (Milanovic et al., 2013; Tuna et al., 2009; World Health Organization, 2021). For instance, muscular strength decreases in time (Hayashida et al., 2014; Keller & Engelhardt, 2013), same happens with speed (Dean, Kuo & Alexander, 2004), power, motor coordination (Forte & Monteiro, 2022; Power, Dalton & Ric, 2013), and reactions, which all become slower (Woods, Wyma, Yund, Herron & Reed, 2015). Moreover, noticeable changes can be also exemplified through diminished pulmonary capacity (Roman, Rossiter & Casaburi, 2016), accelerated vascular stiffening, heart and vasculature function descent (Strait & Lakatta, 2012), immune system lower capacity to respond to infections (Montecino-Rodriguez, Berent-Maoz & Dorshkin, 2013), reduced bone density (Demontiero, Vidal & Duque, 2011). All these physical changes make older employees more likely to need more extended time for physical recovery after tasks that require effort (Freiberg, Saifouline & Zieschang, 2017), and to need more recovery time after work accidents (Kiss, De Meester & Braeckman, 2008). Older employees are also

more prone to severe work-related accidents (Bravo et al., 2022; Peng & Chan, 2019). All these aspects raise the question of whether working after the age of 65 is a realistic goal. The answer to this question may be yes, if physically demanding tasks are doubled by some specific actions, such as reduced working time, reduced volume of tasks, or increased time for recovery after physically demanding tasks (Flower, Tipton & Milligan, 2019). The answer may be yes also from another perspective, by answering the following question: how many tasks are still physically demanding today? During the Fourth Industrial Revolution, the trend is characterised by the development of robotics, artificial intelligence, automatization, and 3D printing (Schwab, 2016). The number of jobs that require physical abilities decreased, and it is expected to decrease even further. For instance, the most prone to be substituted by technology in the future, are the jobs related to agriculture, manufacturing, transport, construction, mining and utilities, (Nankervis et al., 2021). Low-skilled, routine jobs are also at a higher risk of automatization, such as waiters, shelf fillers, farm workers, cleaners, agricultural occupations, elementary constructions occupations, window cleaners, food process operatives, and metal machine operatives (Office for National Statistics, 2019). A shift from physical and manual labour from the First Industrial Revolution to the service sector mainly, in the Third Industrial Revolution pushed towards artificial intelligence, technology and robotics in the present, aspects which require different core work-related skills for these jobs (Min et al., 2019).

What are core work-related skills that are solicited by the Fourth Industrial Revolution? Are these new required core work-related skills creating an opportunity for older employees to prolong their working lives beyond the age of 65? Complex cognitive abilities and complex problem solving are required core work-related skills nowadays, projections showing they will be solicited more in the upcoming future (World Economic Forum, 2016). Moreover, top skills required in the near future will consist of analytical thinking, innovation, active learning and learning strategies, reasoning, problem-solving and ideation, systems analysis and systems evaluation (World Economic Forum, 2020).

Despite the increase in automatization and the risk of being replaced by computer work, the scholarly literature has presented a list of jobs which can be performed in the near future, alongside the logistical dynamics and technical transformations as follows: recreational therapists, occupational therapists, physicians/surgeons, teachers, mental health counsellors, computer system analysts, curators (Min et al., 2019). Also, there are more jobs in a high demand at present already such as: data analysts and scientists, artificial intelligence and machine learning specialists, big data experts, digital marketing and strategy professionals, process automation specialists, business development professionals, digital transformation and software developers, information security analysts, internet of things specialists, project managers and risk management experts (World Economic Forum, 2020). All jobs listed above require, in full, cognitive abilities and are less physically demanding. These dynamics may create advantages for older employees since cognitive abilities and physical abilities have different dynamics in old adulthood. Some studies pointed out that performance in tests related to cognitive abilities is similar for older workers and younger workers (Brough et al., 2011). Overall, it is estimated that crystallised cognitive abilities are preserved for more time at an old

age level (e.g. general knowledge, vocabulary abilities). Study results showed that abilities related to experience and expertise increase over time, while fluid abilities decrease earlier (e.g. working memory, processing speed) (Murman, 2015; Passer & Smith, 2003). Moreover, many cognitive abilities do not decrease significantly until up to late adulthood for many older adults (up to the age of 80 years) (Schaie, 1994). Other studies have revealed that cognitive stimulation preserves cognitive functioning (Ball, Edwards & Ross, 2007; Mapelli et al., 2013; Ljungberg et al., 2013; Wilson et al., 2007), and work-related activities are elements that can provide cognitive stimulation, maintaining, therefore, cognitive functioning (Potter, Helms & Plassman, 2008).

Other abilities expected to be required in the future are social abilities (e.g. leadership, social influence, negotiation etc.) and those related to stress management and emotions (e.g. resilience, conflict management, flexibility in a social context, emotional intelligence etc.) (World Economic Forum, 2020). When it comes to stress management abilities of older employees it is reported that these individuals manifest lower levels of stress than younger employees (Hsu, 2019) and they are more resilient when it comes to stress and job-related stress (Mauno, Ruokolainen & Kinnunen, 2013; Romero et al., 2020). When it comes to conflict management, evidence revealed that older employees may use avoiding but constructive conflict management strategies with supervisors (e.g. waiting, letting matters settle down, taking a break from a conversation is tense, flexibility etc.) and less dominant conflict management strategies with subordinates as compared with younger workers (Yeung, Fung & Chan, 2015). They are also less prone to use destructive strategies (e.g. winning at all costs, displaying anger, demeaning others etc.) (Davis, Kraus & Capobianco, 2009).

4. Conclusions

Recently a question of whether older adults (65 years old and over) may remain active was raised, by postponing their plans for retirement or at least having a choice to decide by themselves when they will retire. In this direction, some countries cancelled the mandatory retirement age, but this approach towards older adults (after the age of 65 years) as a potential labour resource raised questions regarding its feasibility even further. It was revealed that the changes related to the Fourth Industrial Revolution fit more than ever the needs and characteristics of older employees.

Physically demanding jobs are becoming rare as they are replaced by industrial robots, alongside jobs that require cognitive, social, stress management and emotional abilities solicited more and more today, due to the fact that they are less likely to be automated and replaced by artificial intelligence.

Cognitive, social, stress management, and emotional abilities are more likely to be preserved after the age of 65. Working after the age of 65 years can be a feasible goal due to work flexibility, in terms of working time, spatial arrangements, and work roles, aspects which are already frequently visible in the Fourth Industrial Revolution due to technology developments.

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