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Active Ageing and Digital Transition: Perspectives of Engagement in Silver Economy

Translating the 'green and digital transition', which is a key element of the EU's strategic objectives, into practice cannot fail to consider and adapt to the complex set of impacts of demographic change. Building the conditions for 'longevity society' also implies a paradigm shift towards active ageing, which is closely linked to the digital switchover and the development of the 'silver economy'. Based on international and national statistical data, research and expert evidence, the paper argues that the successful coordination of these three pillars requires an integrated approach to public policy and the tailor-made introduction of diverse forms of competence development.

Keywords: active ageing, silver economy, digital transition, attitudes, skills

Introduction

Demography, and particularly the ageing of the population, is a major challenge for all European countries. The phenomenon of an ageing society is a complex problem, based on the one hand on the persistently low birth rate, and on the other on the increase in the number of older people, the length of life expectancy and the old-age dependency ratio. The European Commission forecasts that the population of the European Union (EU) will peak around 2026 due to ageing and declining birth rates and will then gradually decline in the decades thereafter. As a long-term consequence, the working-age population of the EU will decline (by 57.4 million till 2100), while the dependency ratio of older dependants will start to rise sharply (from 33% to 60% by 2100).[2] This trend is also supported by medium-term projections that the proportion of older people in the EU will reach 30% of the total population by 2050 and the proportion of older dependants will rise from 4:1 to 2:1 by 2060.[3]

In this context, the translation into practice of the 'green and digital transition', which is a key element of the EU's strategic objectives, cannot fail to consider and adapt to the complex set of impacts of demographic change.

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[2] European Commission 2023a: 2.

[3] Tkalec 2018: 1.

Demographic changes have a direct impact on the EU's human capital and competitiveness, as ageing and declining working-age populations are expected to exacerbate labour shortages and increase pressure on public budgets, and contribute to further widening territorial disparities, which are already a major problem.[4] This will also mean that more and more older people will be dependent on the financial and social care of a shrinking working-age population. However, despite the unfavourable demographic, social and economic data and forecasts, the process can still be halted, and the recognition and mobilisation of the assets of an ageing society can play a key role in this process. In this context, ageing is not a burden but a source, or even a driver, of sustainable economic growth, based on the experience, added value and work skills that generations of older people have acquired over the decades. Some authors argue that technological innovation is the most appropriate tool to successfully address major societal challenges (demographic, ageing).[5] However, the spread of smart technologies not only creates opportunities, but also requires the development of the knowledge, skills and inclusive attitudes needed to use new tools.[6]

With statistics showing that people across Europe are living longer and healthier lives, it is vital for the EU to build the conditions for 'longevity society', which both values longer old age and empowers older citizens to take control of their own lives.[7] This is in fact a paradigm shift from 'eldercare' to 'active ageing'. The former lasted from the 1940s to the 1980s, when states sought to care for older people by developing pension systems. However, from the late 1980s onwards, the 'reintegration' of older people into socio-economic life began to take place, creating the conditions for 'active ageing'.[8]

The terminology is not actually new, it has been used by various international organisations for decades. The OECD has focused on productive living, the WHO on improving health and quality of life, and the EU on employment opportunities based on lifelong learning.[9] In recent years, the emerging discourses have taken a much broader and more complex approach to the understanding and practice of active ageing, framed by the emerging silver economy. In this sense, older people are both on the demand and supply side of the market, with quality of life, social well-being and economic innovation being the common set.

The structure of this paper is based on three research questions in the context of the EU and Hungary. Firstly, we examine the consumer and labour market opportunities for older people in the context of active ageing and the 'silver economy'. Linked to this, we will look at how the digital switchover opens tailored or personalised opportunities for active ageing people in the context of the 'silver economy'. Finally, we look at perspectives and strategies for the framework conditions for active ageing.

Our hypothesis is that successful coordination of active ageing, the silver economy and the digital switchover requires an integrated approach to public policy and the tailor-made introduction of diverse forms of competence development.

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4 European Commission 2023a: 1.
5 LIPP–PEINE 2022.
6 European Commission 2023a: 4.
7 European Commission 2023a: 1.
8 FORMOSA 2017; TKALEC 2018: 1.
9 OECD 1998; WHO 2002; Commission of the European Communities 2002.

In addition to the relevant literature published on the topic, the analysis is based primarily on international and domestic statistical data, expert materials published by the EU and the Government of Hungary, as well as relevant literature, complemented by the inclusion of the results of the research conducted in spring 2020 at the initiative of the Ludovika University of Public Service.

Active ageing on the horizon: moving in the direction of silver economy

Demographic trends show that the sustainable functioning, integration and reproduction of modern societies cannot be imagined without the active participation and value-producing activities of an ever-increasing ageing population. Sustainability of quality of life presupposes active ageing, so that older people are able both to maintain their health and to renew their capacity to take on new responsibilities and to work.[10] The active ageing approach focuses on how older people can contribute to creating and maintaining well-being in society.[11] The labour market has an increasing need for an ageing workforce, for whom the period after the cessation of economic activity offers – if their physical and mental condition allows – new opportunities for voluntary work, without compensation, or even new income-earning opportunities in addition to a publicly funded pension, contributing to a meaningful life. It should not be overlooked that the ageing population is increasingly becoming a consumer in a growing number of market segments, creating a demand for a diversified consumer base in traditional and creative industries and services.

The data shows that the population of the European Union is peaking in these years after 50 years of growth, which means that in 2021 more than a fifth (20.8%) of the population will be over 65 (i.e. the retirement age in Hungary), while the proportion of young people will decline.[12] Official statistics show that life expectancy has increased by more than two years per decade on average since the 1960s, so estimates that 30% of Europeans will be aged 65 or over by 2070 (up from 20% in 2020) appear plausible.[13] The proportion of people aged 80 or over is projected to more than double to 13% between 2019 and 2070. In contrast, the working-age population (20–64 years) is projected to decline (2019 figure: 59%, projected for 2070: 51%). During this time, the number of children and young people (0–19 years) is projected to fall by 12.6 million.[14] This shows that the balance in the EU's demographic structure is beginning to shift towards an ageing and older population structure. The trend is already well underway, with the most obvious consequence being that while the proportion of working-age people is falling, the proportion of people living on pensions is rising. This places a considerable burden on society, as it is necessary to

[10] In the present study, we use the WHO age classification, according to which people aged 60–74 are the aging, people aged 75–89 are the elderly, and people aged 90 and over are the very elderly.

[11] Tóth 2024: 114.

[12] European Commission 2023b.

[13] Kacprowska 2023: 68.

[14] European Commission 2020: 10.

ensure that the ageing population can pay pensions – for which they have already paid their contributions during their active years in accordance with the rules in force – and to cover the costs of decent and necessary health and social care.[15]

The EU's ageing policy dates back to the 1957 Treaty establishing the EU. The Treaty treated social rights as essentially an economic dimension of cooperation between Member States, but the EU began to address the issue of older people in more depth in the 1990s, in the context of the creation of a 'Social Europe'.[16] An important precursor is the 30-article Community Charter on the Fundamental Social Rights for Workers, which, among other things, declared the protection of older people, including workers' pension rights. An important milestone was the 1997 Treaty of Amsterdam, whose separate chapter on 'Employment Policy' included a ban on social exclusion, encompassing age discrimination, too. Ageing policy in this period was part of employment policy and part of the closely related 'social protection system', which covered the assessment and management of risks related to ageing, illness, unemployment and poverty, which were covered exclusively by the Member States' own budgets. This approach, whose main thematic elements were the social dimension, the social cohesion and the situation of older workers on the labour market, has undergone a major paradigm shift since the early 2010s. The new paradigm, which had previously regarded older people as a passive social group in need of care, focused on the potential for maintaining activity and on a resource-based approach to the role of older people in society.

Active ageing policies are based on the premise that social and demographic trends are leading to the emergence of new needs, wants, demand and supply factors at both social and economic levels. The health of most ageing people is constantly improving as a result of healthy lifestyles and medical advances, opening up new perspectives, opportunities and challenges.[17] These changes have affected both employment and social security policies, but have also led to changes in the definition of labour market needs and job-related competences. At the same time, pilot programmes and awareness-raising campaigns were launched to break down prejudices and stereotypes ('ageism') about older generations. These efforts have contributed significantly to raising the average employment rate of workers aged 55-64 from 45% in 2011 to 60.5% in 2021.[18]

The concept of active ageing and its translation into practice is the 'silver economy'. Although the terminology does not have a universally accepted definition, it has been part of the expert discourse for decades. Initially, it was understood as a way of improving the quality of life of older people and stimulating innovation.[19] Ageing was seen as a societal challenge with considerable economic potential, in so far as the purchasing power of older people is reflected in consumption. In this way, the narrative of ageing as a health challenge and a fiscal burden can be replaced by a narrative of innovation, growth and opportunities for new jobs.[20] A similar, economy-oriented approach to the 'silver economy' is advocated by the European Commission as "the economic opportunities

15 RAUH–TALYIGÁS 2021: 74.
16 RAUH–TALYIGÁS 2021: 76.
17 European Commission 2021.
18 European Commission 2023b: 11.
19 EATOCK 2015.
20 LIPP–PEINE 2022: 3–4.

arising from public and consumer spending on ageing and the specific needs of the over-50 population".[21] The OECD defines the silver economy as "an environment in which people aged 60 and over interact and thrive in the workplace, engage in innovative entrepreneurship, contribute to the market as consumers and lead healthy, active and productive lives". [22]

According to the consensus of major international organisations and the relevant literature, the main drivers of the silver economy are innovation, the emergence of new consumer markets and the creation of sustainable public spending. The former is best illustrated by the figure of $7 trillion per year in 2015 for the silver economy in the EU, which contributed to sustaining more than 78 million jobs. Within this, the growing ICT developments (healthcare devices, smart homes, robots) have triggered significant investment stimulus, especially in the labour-intensive service sector. This has made the 'silver economy' the third largest economic sector in the EU.[23] In terms of public spending, it accounted for 25% of GDP in the EU in 2015, or around 50% of public expenditure, and is forecast to grow by more than 4% of GDP by 2060. Consumption is projected to grow by a further 5% per year in the future, with an estimated GDP share of EUR 6.4 trillion by 2025, contributing to 88 million jobs.[24]

All in all, the ageing and active population forms consumer and worker groups. It is a major purchaser of health, recreational and cultural services, but is also an important player in the markets for healthy food, health products and beauty products and services, and a regular customer of public administrations.[25] The silver economy is therefore not only a means of meeting demand, but also a means of developing an active and even creative economy. In this context, it is clear that active ageing is a driver of economic growth, helping to maintain Europe's competitiveness and to supplement the steadily declining working-age population. However, the level, quality and added value of consumption and labour market participation of older people vary considerably not only between countries but also between regions. This is not unrelated to the economic, legal, social, demographic, geographical, educational and infrastructural factors that generate and determine regional differences in development.[26] At the same time, it should be borne in mind that the ageing population is not only made up of active or potentially active social strata in good physical and mental health, but also includes vulnerable (disabled) and dependent groups. Meeting the needs of disadvantaged older people with disabilities is an integral part of building the conditions for a well-functioning silver economy. This includes accessibility in the workplace and other segments, and the gradual decline in older people's sight, hearing, health, physical and cognitive abilities.[27] The importance of this issue is underlined by the fact that the Commission's Green Paper on Ageing also addresses the issue, highlighting three factors: mobility, connectivity and accessibility. The Green Paper also points out that women are in the majority among the elderly and

21 European Commission 2015; Tkalec 2018: 3.
22 Tkalec 2018: 3.
23 European Commission 2015: 16.
24 European Commission 2015; Tkalec 2018; Lipp–Peine 2022.
25 Csoba–Ladancsik 2020: 56.
26 Kaiser 2009; European Commission 2023b: 12.
27 European Commission 2015.

that their specific needs must be considered. This is linked to the provision of urban infrastructure and services, their organisation in a way that takes account of older people, the development of smart homes, and the creation of technical and human conditions for 'remote (digital) social care and support'. However, the use of digital solutions also poses challenges for older people, especially for those (rural) older people who do not have basic digital skills or access to the internet.[28]

This also shows that active ageing and the development of a silver economy cannot be achieved through 'one size fits all' solutions, but rather through tailor-made solutions and public policies that are adapted to local and regional needs and conditions, consumer and employee segments.

The digital transformation as a 'window of opportunity' for the ageing population

The EU's digitalisation strategy was based on the March 2021 Communication 'Digital Agenda 2030: A European way to deliver the Digital Decade', in which the Commission set out its vision for the period up to 2030 to empower citizens and businesses through digital transformation (the Digital Decade). The EU's path to the digital transformation of the economy and society should include digital sovereignty open to the external environment, respect for fundamental rights, the rule of law and democracy, inclusiveness, accessibility, equality, sustainability, resilience, security, improving quality of life, availability of services and respect for citizens' rights and aspirations. This was followed on 8 January 2023 by the entry into force of the Decision of the Parliament and of the Council establishing the Digital Decade 2030 policy programme, which aims to create a people-centred and sustainable digital future that delivers greater prosperity for citizens and businesses in the European Union.[29] The following general objectives are key for active ageing and the 'silver economy':

- a digital environment for all, everywhere in the EU, with universal access to digital technologies and data
- bridging the digital divide
- acquire and use digital skills (80% of 16–74 year olds should have at least basic digital skills)
- the possibility for everyone to participate online, access public services and health services (100% online access to key public services and 100% of EU citizens to have access to electronic health records and a secure electronic identification (eID) recognised in all EU countries)

In this context, the Declaration on Digital Rights and Principles states that "everyone has the right to education, training and lifelong learning and should have the opportunity to acquire basic and advanced digital skills". However, 44% of Europeans, especially

[28] European Commission 2021.
[29] The European Parliament and the Council of the European Union 2022.

among older people, currently lack basic digital skills, which hinders their use of digital technologies for everyday tasks and access to services offered online.[30] Developing the digital skills of the population is therefore one of the EU's biggest challenges, which cuts across all objectives and targets.

Today, knowledge and lifelong learning are of paramount importance, adapted to age-specific needs.[31] While young people are being 'born into' the digital world, older people are also increasingly interested in acquiring and applying digital skills. As the EU Green Paper states: "Continued learning can also help to delay the onset of dementia and prevent cognitive decline related to old age. It is also a way for older people to play an active role in society."[32]

The digital switchover is now part of the present, but it also means that to take advantage of the technology and techniques available, you need to have deeper and more complex digital skills, a significant part of which is about who uses the internet, how much and for what. Eurostat has been measuring internet skills in the 16–74 age group since 2015. The survey measures four domains (information, communication, problem solving, software skills), distinguishing different groups depending on the variety and complexity of activities: no digital competences, low competent, basic competent, above basic competent. The latest data show that the digital divide is still wide between different age groups, in other words, the existence of digital competences is strongly influenced by socio-demographic factors. Only 28% of people aged 65–74 have basic digital skills, compared with 70% for both 16–24 and 25–34 year olds, and this is further exacerbated by macro-level and regional differences between Member States.[33] Current trends suggest that, without much wider target group involvement in education and training at EU and Member State level, only 59% of the population will have at least basic digital skills by 2030, compared with 56% today.[34]

However, to achieve the objectives, it must be considered that the ageing and elderly population is by no means a homogeneous group. Above all, they differ in their internal age composition, so that there can be differences of up to decades between them, which further divides old age into 'younger' older people (under 75) and 'older' older people (over 75). However, it is even more important for the silver economy if a more in-depth understanding of the older age group, which is considered to be essentially heterogeneous, is based on the skills acquired, education, social role, financial situation, cultural attitudes, and physical and mental health status. These attributes together express the characteristics that influence the needs, demands and consumption patterns of older people. This is reflected in the continuation, modification or abandonment of previous needs and, increasingly, in the setting of new goals and forms of activity.

This makes it a priority to integrate basic digital skills and competences into the toolbox of active ageing and, through this, the 'silver economy'. In the following, we have identified the main segments of the 'silver economy', without claiming to be exhaustive,

30 Eurostat 2023a.
31 Csath et al. 2018a.
32 European Commission 2021: 5.
33 Eurostat 2023b.
34 Eurostat 2023a.

and on this basis, we provide concrete examples of those forms of activity, smart solutions and customer-centric public service delivery dimensions that represent added value on both the demand and supply side in the context of active ageing.

Table 1: Main segments of the silver economy

Media	Fashion industry	Health services	Home benefits
Properties Smart homes	Education, adult education	Tourism	Home for the elderly, individual care
Perseverance Health services	Public services	Beauty industry	Transport
Culture, recreation	Information and communications (ICT) technology	Home delivery	Robotics
Architecture	Design	Public transport	Local economy
Digitalisation			

Source: compiled by the author based on ZSARNÓCZKY *2016*

Internet use is a key indicator of digital competences, showing how an individual or social group intends to achieve their chosen goals – which are also linked to the main segments of the 'silver economy' – through online activities. General everyday goals include getting information (reading online news portals), communication (sending messages, using social networking sites) and public transport. Learning, working, tourism, office, banking and health care, and online shopping are more specific goals and concern a narrower group of older people.

The above objectives and activities are carried out by users using digital tools and smart applications. In the case of transport, for example, older people may also benefit from online map search, route planners, electronic ticketing for car services, or digital parking ticketing. Silver tourism is now a distinct sub-sector, with popular consumer applications such as online accommodation search and booking, local apps for destination cities, and discount city maps, region maps and accommodation price comparison websites. Where older people are employed in the tourism sector, however, the focus is on various forms and tools of online communication.

Regarding the role of digital transformation in active ageing and the development of the 'silver economy', both international and Hungarian research emphasises the importance of acquiring the necessary knowledge and skills.[35] However, in addition to the transfer of basic knowledge, particular attention should be paid to data security, the dangers of online fraud and the appropriate and optimal use of certain applications and internet sources. From the perspective of older workers' employment, it is also important to prepare both the workplace and staff for intergenerational cooperation and mutual needs.

The older population in general has a positive attitude towards the use of ICT technologies and recognises their potential benefits. Examples of such benefits include social

[35] VAJDA 2017; CSATH et al. 2018b; KRISTÓF–GYŐRI 2021; BUTT et al. 2023.

isolation, overcoming loneliness, improving cognitive skills, and gaining knowledge and information.[36] However, in practice, without the right supportive environment and positive messages, these feelings can quickly change under the influence of initial experiences of failure and the still present ageism, leading to frustration, rejection and isolation. Consequently, the success of digitalisation in the world of active ageing and the 'silver economy' is largely determined by perceptions and attitudes towards new technologies, in addition to existing knowledge.

Conditions and prospects for active ageing in Hungary: number of healthy years, employment, strategies and attitudes

In Hungary, the share of the population aged 65 and over increased from 13% in 1990 to 19% in 2017 and is projected to reach 29% by 2070. As in other European countries, the internal age composition of the elderly has changed significantly over the last few decades, as reflected by the fact that the number of people aged 80 and over in Hungary was 260,000 in 1990, 412,000 in 2016 and 439,000 in 2020.[37]

The number of years spent in good health considers not only life expectancy but also quality of life, making it one of the most important indicators of active ageing in Hungary. Since 2005, there has been a significant increase in the number of years lived in good health for both women and men, from 54.3 to over 60 years for women and from 52.2 to almost 60 years for men. Since 2012, however, the increase seems to have come to a halt (with fluctuations from year to year). The EU average in 2015 was 63.3 years for women and 62.6 years for men (an increase of 1.5 years for women and 1.2 years for men compared to 2014). After a gradual catch-up, the Hungarian figure is still 3 years below the EU average. At older ages, the situation worsens: Hungary lags by 3.5 years in terms of the number of additional healthy life years expected at age 65. In terms of healthy life years, the situation is worse than for life expectancy at birth, which only considers mortality (not quality of life): in 2015, the value of 79 years for women was 4.3 years below the EU average, and 72.3 years for men 5.6 years below. The level of health inequality in the country is considered high. Regional values show a correlation with economic development. In the most developed region of Central Hungary, the number of years spent in good health by women and men is in line with the EU average: In Western and Central Transdanubia the gap is relatively small, while in the rest of the country the value is 4–7 years lower.[38]

On the employment side of active ageing, on average in the EU, an increasing share of people aged 65–74 is in work. Typically, male employment rates in older age are higher, ranging from 27% in Estonia, 17% in Latvia, Lithuania, Portugal, Sweden and to around

[36] Butt et al. 2023: 6.
[37] Rauh et al. 2021: 17.
[38] Nemzeti Közszolgálati Egyetem 2018: 50.

6% or less in Ireland (including, for example, Austria, Slovakia, Greece, France, Belgium). Rates are lower for women, except in the Baltic States, where they reach 9–12%).[39]

By contrast, according to the latest edition of the KSH's[40] age-structured economic activity table, almost 121 thousand of the nearly two million old-age pensioners aged 65–74 (age-eligible pensioners, whose number is 150 thousand less than the number of women receiving a reduced pension, i.e. 1.85 million) are working.[41] On the one hand, this means that only 6.5% of pensioners are working in addition to their pension, and on the other hand, according to the latest KSH employment flash estimate, pensioner workers account for only 2.5% of the 4.75 million employed.[42]

The National Strategy on Ageing, adopted in 2009, set out the following objectives to be achieved by 2034, based on the principles of active ageing: to bring life expectancy at birth closer to the EU average, to increase the number of years spent in good health, to increase the number of people remaining active, to ensure income security in old age, to strengthen social inclusion, to improve the quality of services (health, social, educational, cultural, etc.), considering the needs and interests of the ageing and older people, supporting lifelong learning for older people, ensuring accessibility of digital learning materials. The document identified the task of promoting the 'management' of the ageing process from an early age and a change in social attitudes, both economic and social, to the perception and experience of ageing.

The National Digitalisation Strategy (NDS) provides the framework for the operational implementation of active ageing in the context of the digital switchover and the silver economy.[43]

Recognising the need for digital transformation, the NDS vision places modern, high-speed broadband infrastructure, the digital economy, digital skills development and digital public services at the heart of Hungary's competitiveness and modernisation efforts, with the aim of moving Hungary from 22nd place in the European top ten in terms of digital economic and social development by 2030. Thanks to this progress, digitalisation can also be a breakthrough for the Hungarian economy and society at international level. The NDS is built on the following pillars: digital infrastructure, digital competence, digital economy, digital state. The NDS is in line with the Digital Agenda 2030 (Roadmap to the Digital Decade), the EU's policy agenda.

The Digital Competence Pillar aims to increase the proportion of digitally literate workers and almost halve the digitally excluded by continuously improving the digital competence and user awareness of the population and the digital skills of workers. A key measure for active ageing is the 'Inclusion of Senior Citizens in the Digital Society, Age Management Programme'. Its main elements are the development and implementation of a digital competence development programme tailored to the life situation and

39 Eurostat 2024.

40 KSH – Hungarian Central Statistical Office.

41 To interpret the statistical data, it is also important to be aware of who is employed according to the methodology of the HCSO. According to this definition, a person is employed if he/she has worked at least 1 hour of gainful work in the week preceding the week of the survey (the reference week) or has had a job, but has not worked in it temporarily (e.g. due to sickness, or holidays).

42 KSH 2024a, 2024b.

43 Magyarország Kormánya 2022.

interests of older people; the provision of mentoring, tutoring and consultancy support; the organisation of awareness-raising and sensitisation programmes; and the creation of a nationwide remote monitoring system for citizens in need of social assistance (elderly or chronically ill people) using smart devices. This will open new opportunities on both the supply and demand sides of the silver economy by encouraging the development of smart devices and applications, training programmes tailored to the needs of specific age groups, and the acquisition of skills and competences for the future labour market changes for older people as potential workers.[44]

However, as already mentioned, the ageing and older age groups are in many ways a heterogeneous group, which can be further subdivided into specific subgroups. In this context, among the components that make up digital competences, those factors that, beyond prior knowledge, fundamentally determine the attitudes of individuals and groups towards the adoption and use of new technologies and digital innovations are unavoidable.

In order to better understand and explain the background, as well as the opportunities and bottlenecks of involving senior citizens in the digital society in Hungary, this paper relies on the main findings of the so-called sociotechnical perspective and one of its main theories, as well as empirical data stemming from a nation-wide, representative survey.

The Diffusion of Innovation Theory (DOI) developed by Everett Rogers is an often-used analytical concept which describes innovation as a broad, multidimensional process that results in a given product or technology becoming widely accepted within society. An important aspect of diffusion of innovation is that the spread of innovation over time can in most cases be described by the so-called S-shaped curve: the number of groups using and adopting a product or technology is initially low, and then, after a point of gradual increase, the number of users starts to decline again. Each stage of the S-shaped curve allows the definition of well-defined groups, including variables such age, social status, education, and attitude towards risk. Such characteristics can determine a potential adopter's perception of the value of an innovation and the feasibility of its adoption. According to Rogers, individuals can be classified into five categories on the basis of when they are likely to adopt new innovations. These categories consist of individuals with a similar degree of innovativeness. Innovators are the first, most innovative and venturesome adopters who import innovations into wider systems. Early adopters are the individuals that follow innovators and often serve as opinion leaders and role models for the early majority who adopt the innovation after them. The late majority adopts the innovation just before the final group which consists of laggards with lengthy innovation-decision processes. In this categorisation, the innovativeness of individuals is measured by behavioural profiles such as personality variables and communication behaviour.[45]

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44 However, it should be noted that the acquisition of digital skills provides older people with a much wider range of quality of life and productivity (e.g. meaningful leisure, family and other social contacts, mobility), not limited to income-generating activities.

45 Rogers 2010: 22.

Following the logic and categories of SCOT and DOI, we relied on the results of the nationwide, address-list survey of the Hungarian adult population conducted on behalf of the Ludovika University of Public Service in the Spring of 2020 with the participation of 2,500 people, representative of the population aged 18 and over, resident in Hungary, on gender, place of residence and education.[46] Half of the sample (1,250 persons) were interviewed in a separate thematic block, which aimed to identify the factors that make someone open to technological innovation. The factors mentioned were: the time of onset of digital device and smart solution use; the extent of smart device and smart solution use; willingness to use current and upcoming smart solutions; awareness of digital device choices; frequency and ways of using the internet; attitudes towards technological innovation (technophile vs. technophobe).[47]

Using the survey data and following Rogers's methodology, we created a separate typology for each device based on the summaries of objective and subjective questions. Respondents received values between 1 and 5. A value of 1 meant that the respondent was not using the given device, and a high value of 5 meant that the respondent started using it the earliest. The resulting high measurement level variable was divided into 5 categories according to Rogers' categories: 20% laggards, 27% late majority, 29% early majority, 21% early adopters, 2% innovators. Due to the low number of items, the category of early adopters and innovators was merged for the sake of analysis, and the resulting variable could be easily interpreted with demographic variables. We also analysed the spread of technological innovations in connection with gender, age and education, but in accordance with our topic, we only describe the relationship between the diffusion of innovations and age. As a result, the following groups were created:

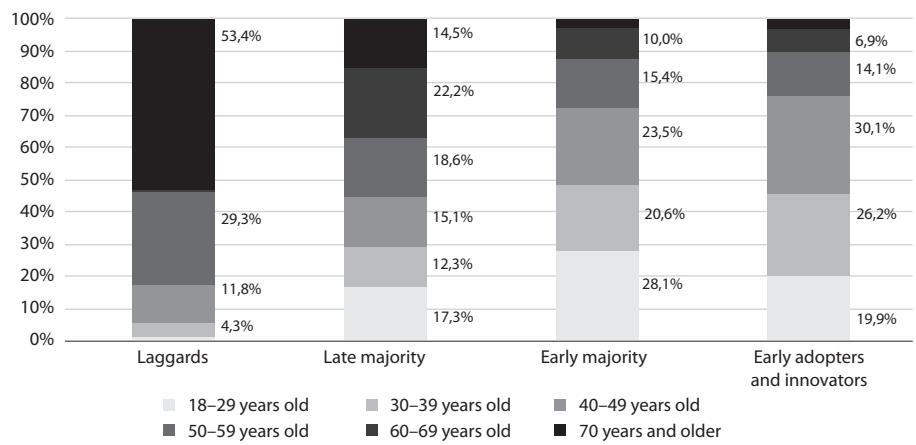

Figure 1: Relationship between the diffusion of technological innovations and age (N = 2,382)
Source: compiled by the author based on the results of the 2020 survey

[46] The title of the survey was: The image and perception of public administration among the population 2020.

[47] For the detailed description of the research methodology and results, see KAISER–GADÁR 2023.

The above shows that three quarters of people aged 60 and over are in the group of laggards, while only one in ten people aged 60 and over are in the early majority. This is critical from the point of view of both digitalisation and silver economy because currently the older Hungarian citizens are, the less able they are to use digital devices and smart solutions. The results of the survey suggest that the older age is associated with lower intention to use digital technology. Although the relationship between age and digital technology is complex, this is a clear indication that comprehensive, measurement-based situation analyses and measures and projects tailored to the needs, attitudes and abilities of the target groups are needed to put strategies into practice.

Conclusions

The increase in the proportion of older people in the population, the social phenomenon of demographic ageing, is a major factor in the more developed regions of the world, in the European Union and in Hungary. The change appears to be increasingly dynamic, based on population projections, and this trend is set to continue in the distant future. The complexity and diversity of the characteristics of an ageing society and the widespread recognition of the social utility of older people – in contrast to social stereotypes about older people – are increasingly expressing socio-economic demands for the individual and social use of the experience and labour of older people and older people.

Digital skills and competences are essential in this process. Without these, individuals are unable to meet labour market challenges, easily access information relevant to their daily lives, purchase consumer goods cost-effectively, among other things, and the social mobility opportunities for those who are excluded from the online world are reduced.

The answers to the research questions of this study confirmed the hypothesis that successful coordination of active ageing, the silver economy and the digital switchover requires an integrated approach to public policy and the tailor-made introduction of diverse forms of competence development. A key challenge in this process is to integrate basic digital skills and competences into the toolbox of active ageing and, through this, the 'silver economy'.

Developing digital skills and reducing the digital divide and encouraging regular internet users to become ICT-aware is one of the key challenges for the digital ecosystem – whether in terms of competitiveness, employment policy or equal opportunities. The available empirical research and even everyday experience confirms the key role of assessing needs, prior knowledge and perceptions and attitudes towards technological innovations, especially smart devices, among older people, which also orient the direction and content of developments and programmes. However, further empirical researches are needed to explore these relationships and correlations in more detail to fully understand the impact of age on technology acceptance and to identify potential mediating factors. In doing so, there is a need to empirically examine the opportunities and limitations of the acceptance and use of digital devices by older people. Another way to consider these issues is to investigate the impact of the urban and rural environment on the emerging silver economy, in accordance with the required supportive

environment that suits the personal needs of the elderly. Equally important, however, is the need to overcome negative stereotypes (ageism) among the active population and to broaden attitudes of mutual respect and acceptance between generations.

This paper argues that the 'silver economy' has both benefits and risks. Among the benefits is that in this narrative, ageing has taken on a new meaning, generating a process of socio-political transformation through activism. On the other hand, it is often criticised for being too optimistic about tackling the challenges of ageing, or for over-emphasising innovation through technological solutions, which may reduce the focus on other, more cost-effective solutions. Since new products and services are mostly created in developed regions where the consumer market is made up of the affluent, many tend to think of the 'silver economy' as a set of products and services for affluent older people. Finally, it cannot be ruled out that familiar lifestyles and activities, such as visiting retail shops and banks, are a more pleasant experience for older people than learning about and using new technologies.

Overall, we consider the NDS findings that only through systematic intervention, locally implemented but nationally coordinated integrated programmes and human network, based on the real needs of the target groups and considering their specific life situation, can the digital world and through it the prospects of active ageing and the silver economy be made attractive, and that this can be achieved if the necessary conditions are created.

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