

Research

Healthy Ageing in the Silver Economy: Lifelong Learning as a Driver of Future Skills

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Abstract:

Population ageing has become one of the defining global transformations of the twenty-first century, influencing healthcare, education, labour markets, technological innovation, and economic development. According to recent demographic projections, the global population aged 65 years and over is expected to nearly double, increasing from approximately 703 million in 2023 to 1.5 billion by 2050. These demographic trends have accelerated the development of the Silver Economy, creating new challenges and opportunities for sustainable economic development.

This paper examines the relationship between healthy ageing, the Silver Economy, lifelong learning, and changing labour-market dynamics. It argues that healthy ageing extends beyond healthcare to encompass cognitive well-being, digital inclusion, social participation, and continuous competence development. Furthermore, the paper proposes a lifelong learning competence framework that integrates the knowledge, skills, and capabilities required to support healthy ageing, longevity, employability, and active participation in the Silver Economy.

Drawing on selected examples from Asian countries, the paper examines how Asian policy approaches promote healthy ageing, lifelong learning, and the Silver Economy. Particular attention is given to the implications of digitalisation, artificial intelligence, demographic change, and economic uncertainty for lifelong learning and workforce participation. The paper also discusses interdisciplinary educational approaches, including experiential learning, design thinking, and narrative-based STEAM learning, as examples of fostering digital, creative, and social competences across the life course. It concludes that investing in lifelong learning is a strategic investment in human capital that promotes healthy ageing, supports longevity, strengthens the Silver Economy, enhances intergenerational knowledge transfer, and contributes to resilient, inclusive, and sustainable labour markets.

Keywords: Demographic change; Healthy ageing; Labour market; Lifelong learning competences, STEAM, Silver economy

1. Introduction

1.1 Population Ageing Trends and Silver Economy

The world is approaching a demographic turning point as the global population aged 65 years and over is projected to nearly double by 2050, increasing from 703 million in 2023 to 1.5 billion. At the same time, the population aged 80 years and over is expected to exceed 300 million by 2030, more than doubling from 143 million in 2020 (Worldmetrics, 2026).

Population ageing has become one of the defining demographic transformations of the twenty-first century. During the past five decades, average life expectancy in Europe has increased by approximately 15–20 years, while persistently declining fertility rates have fundamentally reshaped the continent's age structure. According to demographic projections, individuals aged 65 years and over are expected to represent nearly 40% of the European population by 2080. These demographic changes have profound economic implications. As populations age, governments, businesses, and labour markets must adapt to changing patterns of consumption, employment, healthcare, innovation, and social participation. Statistics of world population by broad age groups, 1950–2100 (United Nations population estimates, 2024) demonstrates the same trends (see **Figure 1**). Purple line (65+ years) on Figure 1 is illustrating the global trend of population ageing. Regarding the share of older people (65+) in the total EU population, **Table 1** (below) demonstrates that Italy (24.7%), Portugal (24.3%) and Bulgaria (24.0%) had the highest shares.

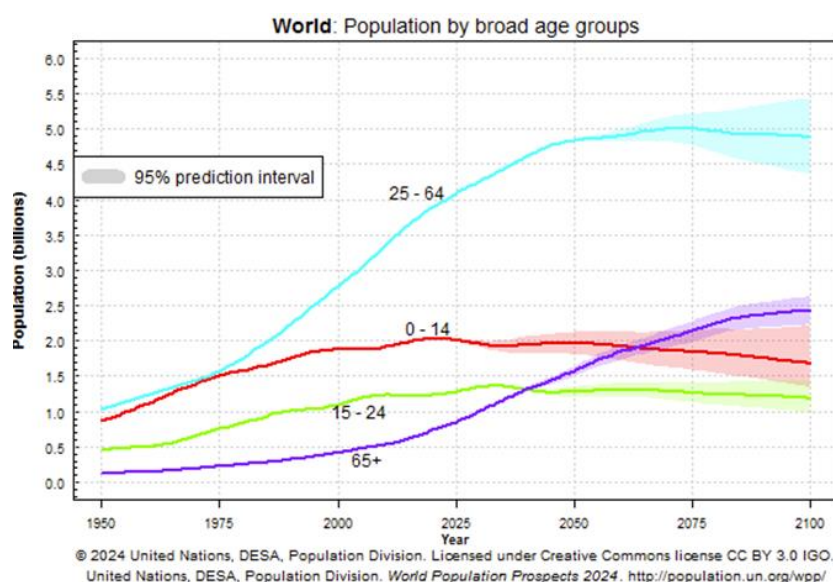


Figure 1. World population by age groups, 1950–2100 (UN, 2024). The UN figure illustrates estimates (1950–2023) and projected population trends (2024–2100) for four age groups worldwide: (red 0–14 year), green: 15–24), and purple: 65 and over. Light blue line (25–64 years) represents the working-age population, which remains the largest age group. Purple line (65+ years) shows the fastest growth among all age groups, illustrating the global trend of population ageing.

This demographic transition has given rise to the concept of the Silver Economy. The earliest precursor to the Silver Economy was the Japanese concept of the Silver Market (Silver Shijō), which emerged during the 1970s in response to rapid population ageing and referred primarily to products and services designed for older consumers. Building on this concept, the European Commission (2018) defined the Silver Economy similarly as "the sum of all economic activities that serve the needs of people aged 50 and over..." (see 3. Definition of Silver Economy).

As demographic ageing accelerates, the Silver Economy extends far beyond social policy and healthcare. It is reshaping labour markets, patterns of consumption, technological innovation, and economic growth. Consequently, the concept has evolved from a market-oriented approach focused primarily on products and services for older consumers to a broader economic framework that recognises the needs, capacities, and contributions of older adults. Realising the potential of the Silver Economy depends on enabling older adults to remain healthy, active, and socially engaged. In this context, the World Health Organization (WHO, 2020) defines healthy ageing as "the process of developing and main-

taining the functional ability that enables well-being in older age." The concept of "functional ability" refers to the capabilities that enable people to meet their basic needs, learn, grow and make decisions, remain mobile, build and maintain relationships, and contribute to society.

Table 1. The population of the EU member states on January 1, 2025

	0-14 years old			15-64 years old			65-years old or over		
	2015	2024	2025	2015	2024	2025	2015	2024	2025
EU ⁽¹⁾⁽²⁾	15.3	14.6	14.4	65.6	63.8	63.6	19.1	21.6	22.0
Belgium	17.0	16.3	16.1	64.9	63.8	63.7	18.1	19.9	20.2
Bulgaria	13.9	14.1	14.0	65.6	62.1	62.0	20.5	23.8	24.0
Czechia	15.2	15.9	15.5	67.0	63.6	63.8	17.8	20.5	20.7
Denmark	17.0	15.7	15.5	64.4	63.6	63.6	18.6	20.7	20.9
Germany	13.2	13.9	13.9	65.8	63.7	63.4	21.0	22.4	22.7
Estonia ⁽²⁾	15.9	16.0	15.6	65.3	63.5	63.5	18.8	20.5	20.9
Ireland	21.4	18.9	18.5	65.7	65.6	65.8	12.9	15.5	15.7
Greece	14.5	13.1	12.8	64.6	63.6	63.5	20.9	23.3	23.7
Spain	15.1	13.2	12.9	66.5	66.4	66.4	18.4	20.4	20.7
France ⁽¹⁾	18.6	17.0	16.6	63.0	61.5	61.5	18.4	21.5	21.9
Croatia	14.7	14.0	13.8	66.3	63.0	62.9	19.0	23.0	23.3
Italy	13.8	12.2	11.9	64.3	63.5	63.4	21.9	24.3	24.7
Cyprus	16.2	15.3	15.2	69.3	67.0	66.5	14.5	17.7	18.3
Latvia	15.0	15.6	15.1	65.6	63.1	63.0	19.4	21.3	21.9
Lithuania	14.5	14.5	14.1	66.9	65.2	65.0	18.6	20.3	20.9
Luxemburg	16.7	15.7	15.7	69.1	69.3	69.1	14.2	15.0	15.2
Hungary	14.5	14.5	14.3	67.7	64.8	64.8	17.8	20.7	20.9
Malta	14.4	12.3	12.1	67.6	69.3	69.5	18.0	18.4	18.4
Netherlands	16.7	15.1	15.0	65.5	64.4	64.2	17.8	20.5	20.8
Austria	14.3	14.4	14.3	67.2	65.8	65.5	18.5	19.8	20.2
Poland ⁽¹⁾	15.0	15.1	14.8	69.6	64.4	64.2	15.4	20.5	21.0
Portugal	14.4	12.8	12.6	65.2	63.1	63.1	20.4	24.1	24.3
Romania ⁽¹⁾	15.5	15.9	15.4	67.5	64.1	64.3	17.0	20.0	20.3
Slovenia	14.8	14.7	14.5	67.3	63.5	63.4	17.9	21.8	22.1
Slovakia	15.3	16.0	15.8	70.7	65.6	65.4	14.0	18.4	18.8
Finland	16.4	14.9	14.6	63.7	61.7	61.8	19.9	23.4	23.6
Sweden	17.3	17.1	16.8	63.1	62.3	62.4	19.6	20.6	20.8
Iceland	20.4	18.3	17.9	66.1	66.1	66.2	13.5	15.6	15.9
Lichtenstein	15.1	14.4	14.2	68.9	65.3	65.1	16.0	20.3	20.7
Norway	18.0	16.4	16.1	65.8	64.9	64.9	16.2	18.7	19.0
Switzerland	14.9	15.0	14.8	67.3	65.7	65.7	17.8	19.3	19.5
Montenegro	18.5	18.2	18.0	67.8	65.1	64.8	13.7	16.7	17.2
Moldova	17.9	17.5	:	71.2	65.1	:	10.9	17.4	:
North Macedonia	16.8	16.6	16.4	70.5	65.3	65.0	12.7	18.1	18.6
Georgia	17.4	19.5	19.2	68.7	64.3	64.2	13.9	16.2	16.6
Albania	19.0	:	15.2	68.6	:	63.6	12.4	:	21.2
Serbia	14.4	14.4	14.4	67.1	63.2	62.9	18.5	22.4	22.7
Turkye	24.3	21.4	20.9	67.7	68.4	68.5	8.0	10.2	10.6
Ukraine	15.1	:	:	69.3	:	:	15.6	:	:

(¹) 2025 provisional/estimated; (²) Break in time series in various years between 2015 and 2025. (:) Not available. Source: Eurostat (online data code: demo_pjanid). Population is estimated as 450.6 million people (Eurostat, 2025). People of working age (15 to 64 years) is 63.6% of the population. Older people (aged 65 years and over) had a 22.0% share. In 2025, compared with 2024, the share of older people increased in 26 EU countries, and only Malta had a constant share.

The objective of this paper is to examine how demographic ageing interacts with technological transformation and changing labour-market dynamics, and to demonstrate that the Silver Economy should be recognised as an important driver of sustainable economic de-

velopment. The paper argues that lifelong learning is a key enabler of healthy ageing, supporting the development of lifelong learning competences and future skills that enable older adults to remain economically active, socially engaged, and adaptable throughout longer working lives. It further demonstrates that continuous learning and intergenerational knowledge exchange are essential for strengthening labour-market resilience, fostering innovation, and promoting inclusive and sustainable economic growth.

2. Reconceptualising the Silver Economy

The European Commission (2018) defines the Silver Economy as "the sum of all economic activity that serves the needs of people aged 50 and over, including the products and services they purchase directly and the further economic activity this spending generates." The report further states that this definition is "consistent with an earlier definition developed by Oxford Economics. "This conceptualisation primarily adopts a demand-side perspective, emphasising the needs, consumption patterns, and purchasing power of older adults.

While this definition has provided an important foundation for understanding the economic implications of population ageing, it places comparatively less emphasis on the productive capacities, accumulated knowledge, and continuing contributions of older adults to economic and social development. Furthermore, the age threshold of 50 years reflects primarily a policy and market-segmentation approach rather than the concept of functional ageing, which emphasises individuals' capabilities, health status, and capacity to participate actively in economic and social life. In contemporary longevity societies, chronological age is becoming an increasingly limited indicator of an individual's productive capacity, employability, learning potential, creativity, and social participation.

Thus, the present study reconceptualises the Silver Economy as an inclusive economic, social, and learning ecosystem that recognises and supports the capabilities, experience, and contributions of individuals throughout longer and healthier lives. Rather than being defined by chronological age, the Silver Economy should be understood as a framework that enables individuals to remain healthy, productive, employable, and socially engaged across the life course.

From this perspective, the Silver Economy should not be understood solely as a response to the growing needs of an ageing population. Equally important is recognising older adults as a strategic source of human capital whose accumulated knowledge, professional expertise, institutional memory, and lifelong learning represent valuable economic assets. Through decades of professional practice, older adults acquire tacit knowledge, professional judgement, leadership capacity, problem-solving abilities, and mentoring skills that are difficult to replace or replicate. These assets represent a form of accumulated human capital that becomes increasingly valuable in knowledge-intensive and innovation-driven economies. They contribute significantly to organisational resilience, innovation, intergenerational knowledge transfer, and sustainable economic development. Rather than defining individuals primarily by chronological age, the Silver Economy should recognise and utilise their capabilities, experience, and continuing potential to create economic and social value throughout longer and healthier lives.

One of the greatest challenges facing ageing societies is not population ageing itself, but the loss of accumulated human capital resulting from the early or mandatory withdrawal of experienced professionals from active employment. In many countries, retirement policies and labour-market practices lead to the departure of highly qualified professionals whose tacit knowledge, professional judgement, leadership, and mentoring capacity cannot easily be replaced. At the same time, younger generations contribute complementary strengths, including digital fluency, openness to technological innovation, and new perspectives. Sustainable labour markets therefore require mechanisms that facilitate intergenerational knowledge transfer, enabling the complementary strengths of different generations to be integrated rather than substituted. Such an approach not only preserves organisational knowledge but also strengthens innovation, resilience, and long-term economic competitiveness.

Over the past decade, the concept of (the) Silver Economy has evolved considerably beyond its original consumer-oriented perspective. Contemporary research increasingly recognises older adults not only as consumers but also as producers, innovators, entrepreneurs, mentors, volunteers, and active contributors to economic and social development.

This broader understanding reflects a paradigm shift from viewing population ageing primarily as a demographic challenge towards recognising longevity as a strategic resource for innovation, human capital development, and sustainable economic growth.

Accordingly, this paper conceptualises the Silver Economy as an inclusive economic, social, and learning ecosystem that enables individuals to remain healthy, productive, employable, and socially engaged throughout longer lives. It recognises older adults not only as consumers but also as creators of economic and social value through their knowledge, experience, innovation, entrepreneurship, lifelong learning, and intergenerational knowledge transfer. Within this framework, lifelong learning competences constitute the enabling mechanism through which future skills are continuously developed, supporting healthy longevity, lifelong employability, labour-market resilience, active participation, and sustainable economic development. Thus, the Silver Economy should not be understood merely as an economy serving older people; rather, it is an economy that values longevity, lifelong learning, accumulated human capital, and intergenerational knowledge exchange as strategic drivers of innovation, resilient labour markets, inclusive economic growth, and sustainable development.

3. Healthy Ageing Policy Strategies in Selected Asian Countries

Compared with the EU, several Asian countries have adopted more explicit national strategies linking population ageing with digital innovation, preventive healthcare, active ageing, and longevity. **Table 2** therefore presents selected Asian strategies that illustrate how ageing is being framed as a national policy priority across health, technology, and social participation. According to the United Nations World Population Prospects 2024, Hong Kong and its neighbouring economies in the East Asia region are ageing rapidly, with South Korea heading towards being one of the world's oldest economies. South Korea's population aged 65 and above is projected to be nearly 40% by 2050, according to the United Nations, compared to just over 20% in 2025. By then, Hong Kong (46.4%), South Korea (39.7%), Taiwan (38.7%) and Japan (37.5%) will be the top four economies globally with the oldest populations.

Table 2. Selected national strategies on healthy ageing and longevity in Asia

Country	National strategy (source)	Main objective
Japan	Society 5.0 (Society 5.0 (Cabinet Office, Government of Japan; 2016; 6th STI Basic Plan, 2021; Integrated Innovation Strategy 2025)	Promotes a human-centred digital society using AI, IoT, robotics & digital innovation to address societal challenges: population ageing and improve quality of life
Singapore	Action Plan for Successful Ageing (Ministry of Health, Singapore, 2024)	Promote active ageing, lifelong learning, employment, health & community participation throughout later life.
South Korea	Fourth Basic Plan for an Aging Society and Population (2021–2025), Presidential Committee on Aging Society and Population Policy. (2020).	Promotes healthy and active ageing through integrated health&long-term care, employment, pension reform, dementia care, community support, and the development of Age-Tech, AI, robotics and digital health& the Silver Economy.
Vietnam	National Strategy for the Elderly to 2035, a Vision to 2045 (Prime Minister's Decision: 383/QĐ-TTg, 2025)	Promotes healthy, active, and dignified ageing through preventive healthcare, family and community support, social participation & age-friendly environments.

4. Megatrends and Life-long learning competences

The megatrends presented in **Table 3** are adapted from the World Economic Forum's Future of Jobs Report 2025, which identifies technological change, geoeconomic fragmentation, economic uncertainty, demographic shifts, and the green transition as the principal drivers of labour-market transformation. To align with the focus of this paper, the technological change dimension is specified as digitalisation and artificial intelligence, while demographic shifts are examined through the lens of population ageing and the development of the Silver Economy.

Table 3. Five megatrends shaping the labour market by 2030 and lifelong learning competencies for the silver economy.

Megatrend	Main impact on the labour market	Lifelong learning competencies for the silver economy
Technological change (Digitalisation & Artificial Intelligence)	Automation, digital transformation, emergence of new occupations, reskilling	Digital literacy, AI literacy, data management, cybersecurity awareness, continuous ICT upskilling, adaptation to emerging technologies, STEAM competences fostering creativity
Economic uncertainty	Productivity optimisation, organisational restructuring, changing employment patterns	Adaptability, resilience, financial literacy, entrepreneurial thinking, problem-solving, project management, STEAM-based innovation, and design thinking,
Green transition	Growing demand for green jobs and sustainable production	Green skills, environmental awareness, sustainable resource management, circular economy competencies, energy efficiency, STEAM competences supporting sustainability, eco-innovation, and systems thinking.
Demographic shifts (ageing)	Labour shortages, longer working lives, increased demand for health and care services, active ageing	Lifelong learning, health literacy, mentoring, intergenerational knowledge transfer, leadership, communication, age-friendly digital skills, lifelong learning, and intergenerational learning across the life course
Geoeconomic fragmentation	Supply-chain restructuring, strategic autonomy, changing global trade patterns	Cross-cultural communication, language skills, international collaboration, systems thinking, risk management, supply-chain resilience, STEAM competences supporting innovation, adaptability, and global problem-solving.

Taken together, these megatrends suggest that future labour-market resilience will depend not only on technological adaptation but also on lifelong learning competences that support healthy ageing, workforce participation, and the development of the Silver Economy. **Table 3** illustrates that the five megatrends identified by the World Economic Forum have important implications for lifelong learning and workforce development. Digitalisation and artificial intelligence are transforming occupations and increasing demand for advanced digital competences, while the green transition is creating new employment opportunities requiring sustainability-related knowledge and skills. At the same time, demographic ageing and labour shortages highlight the importance of health literacy, intergenerational knowledge transfer, age-inclusive employment policies, and continuous competence development. These developments reinforce the need for a lifelong learning competence framework that supports healthy ageing, employability, and active participation in the Silver Economy.

5. Conclusions

Population ageing is transforming demographic structures, economic activity, and labour markets worldwide. Rather than representing a burden on public finances, older adults constitute an increasingly valuable source of human capital, experience, innovation, and purchasing power.

Healthy ageing should therefore be regarded not merely as a health objective but as the fundamental precondition for developing the Silver Economy. By maintaining functional ability, employability, and social participation throughout longer lives, healthy ageing enables older adults to continue contributing to economic growth, innovation, and sustainable development. Achieving these outcomes, however, depends on continuous lifelong learning that equips individuals with the knowledge, skills, and competences required to adapt to technological change, extend working lives, and participate actively in the Silver Economy. Interdisciplinary educational approaches, including STEAM, experiential learning, and design thinking, provide important mechanisms for developing these competences across the life course.

The development of the Silver Economy coincides with profound technological changes driven by artificial intelligence, automation, and digitalisation. Together, these trends are reshaping employment patterns and creating demand for new competencies, flexible working arrangements, and continuous workforce upskilling.

Future labour-market resilience will depend on policies that promote active ageing, retain experienced workers, facilitate intergenerational knowledge transfer, and support continuous skills development. Recognising the economic potential of older adults will

therefore be essential for achieving sustainable growth, social inclusion, and long-term competitiveness in ageing societies.

This paper proposes a lifelong learning competence framework for developing the future knowledge, skills, and competences required in the Silver Economy.

The framework integrates cognitive, digital, health-related, creative, cultural, and intergenerational competences that enable individuals to remain healthy, employable, resilient, and socially engaged throughout longer lives and extended working careers. It argues that the future resilience of labour markets will depend not only on digital and AI-related skills but also on continuous lifelong learning that supports healthy ageing, employability, creativity, cultural participation, and intergenerational knowledge exchange.

Thus, this paper makes two principal contributions. First, it reconceptualises the Silver Economy as an inclusive economic, social, and learning ecosystem that recognises older adults not merely as consumers but as active contributors to human capital, innovation, entrepreneurship, and sustainable economic development. Second, it proposes a lifelong learning competence framework for developing the future knowledge, skills, and competences required in the Silver Economy. The framework integrates cognitive, digital, health-related, creative, cultural, and intergenerational competences that enable individuals to remain healthy, employable, resilient, and socially engaged throughout longer lives and extended working careers.

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