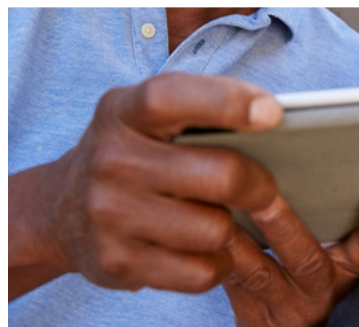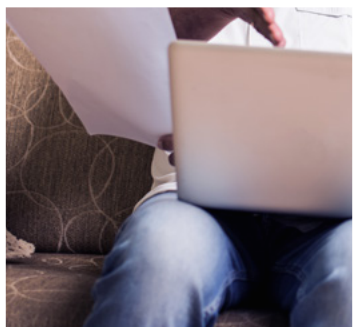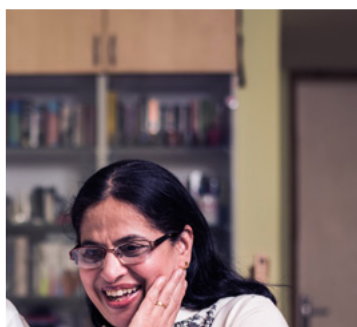# Ageing in a digital world – from vulnerable to valuable

Ageing in a digital world – from vulnerable to valuable

Acknowledgements

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ISBN

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Foreword

Ageing has become an increasingly important topic on the global agenda, as the number of older persons is growing at the fastest pace in world history. Today, and for the first time, people aged 60 or older outnumber children under the age of 5.

Globally, there were an estimated 727 million people aged 65 years or older in 2020. And that number is projected to reach 1.5 billion by 2050, according to the United Nations Department of Economic and Social Affairs World Population Ageing 2020 Highlights, with all regions expected to see an increase in the size of their older populations by that same year.

All of us hope to have a long, healthy and happy life. The digital world opens a wide range of exciting opportunities to age with dignity, and participate as proactive citizens who can fully exercise our rights and contribute our knowledge and experience to enrich our communities.

For decades, older generations have been considered as a vulnerable group and even as a burden on younger generations. These days, healthy ageing strategies and particularly information and communication technologies (ICTs) can help transform this misleading stereotype into a conception that older persons are valuable contributors and strong economic drivers, when governments, industries, companies and entrepreneurs understand and take advantage of the potential offered by the silver economy.

"Ageing in a digital world – from vulnerable to valuable" is the first- ever report to be produced by ITU to raise awareness in the ICT sector on the importance of being prepared to respond to the needs and requirements of ageing populations. This is essential to fulfil our pledge to ''leave no one behind'', as we strive to meet our goals in the 2030 Agenda for Sustainable Development.

ICTs have a fundamental role in creating environments that are suitable to promote healthy conditions and tackle the challenges that come with ageing by empowering older generations. ICTs can become enablers for the social inclusion of older persons, if products and services are designed while taking into consideration their needs and requirements.

The report aims to help ITU members and other stakeholders understand these digital opportunities and take advantage of new possibilities for economic, social and political growth from increased digital inclusion and age-friendly digital environments. It highlights trends, identifies good practices and possible solutions, and presents concrete guidelines that can leverage the contributions of older generations, reduce their vulnerability and foster socio-economic development to achieve healthier and wealthier inclusive societies. It focuses on the role that ICTs can play in ensuring digitally inclusive communities in which older persons are active participants.

ITU is fully committed to helping all members achieve the goals set forth by the United Nations in the [Decade of Healthy Ageing,](#) by contributing to its implementation through this report and by ensuring that ICTs are taken into consideration as the most effective tools for ageing populations to be valuable contributors to socio-economic development worldwide.

Doreen Bogdan-Martin
Director, ITU Telecommunication Development Bureau

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1. Demographic global trends and healthy ageing

The world population is ageing. Due to the global increase in life expectancy and falling fertility rates, both the proportion and the absolute number of older people has risen dramatically. According to World Population Prospects 2019, by 2050, 1 in 6 people in the world will be over the age of 65, while in 2019 this ratio was only 1 in 11.

Figure 1: GIF-Populations are getting older
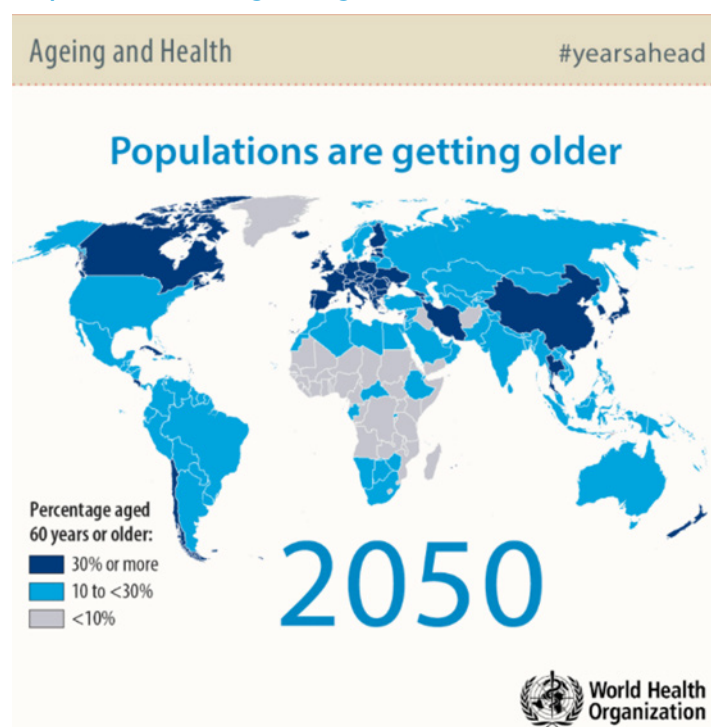
Disclaimer: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of ITU and of the Secretariat of ITU concerning the legal status of the country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

Source: WHO

In 2018, life expectancy in Europe was 81 years. Actuaries predict that babies born in the year 2000 will have an average lifespan of 100 years.

Figure 2: Older population 2015 / 2050
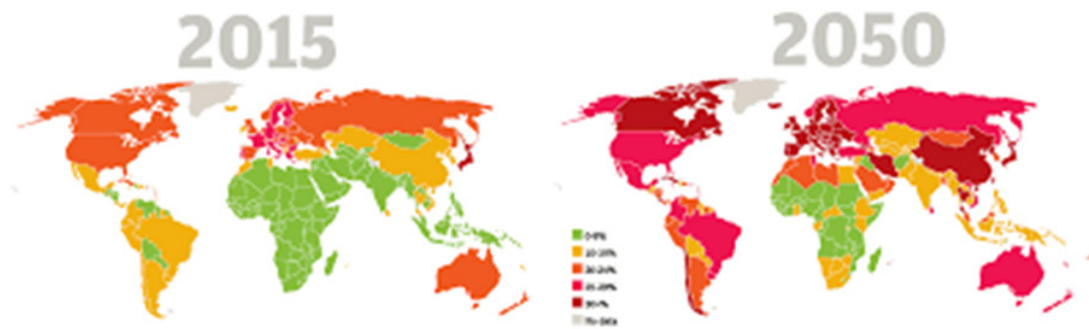
Disclaimer: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of ITU and of the Secretariat of ITU concerning the legal status of the country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

Source: Global Age Watch Index

This demographic shift has arrived at a much faster pace than in the past. While France had almost 150 years to adapt to a change from 10 per cent to 20 per cent in the proportion of the population older than 60 years, countries such as Brazil, China and India will have slightly more than 20 years to adapt to the same change.[1] Population ageing started in high-income countries but is now being experienced at a higher rate in low- and middle-income ones.

Figure 3: GIF-Speed of population ageing
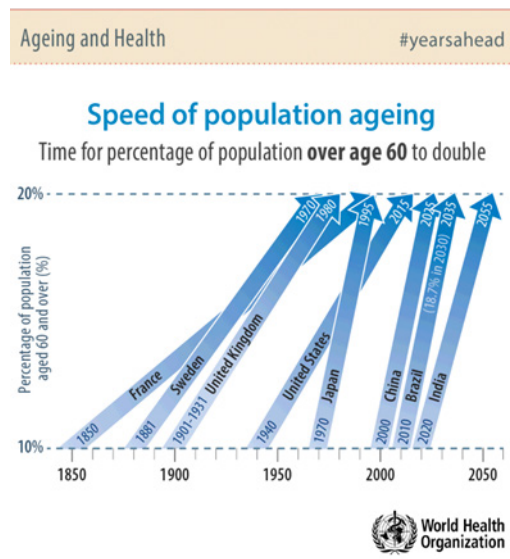
Source: WHO

Even if these trends will have to be reviewed in the COVID-19 context as the pandemic has highlighted the social and physical vulnerability of older generations, all societies have been going through a longevity revolution which is already having important implications for the socio-economic development of countries and regions worldwide.

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[1]   For more information on demographics, visit the World Health Organization's ageing and health website: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health#:~:text=Common%20conditions %20in%20older%20age,conditions%20at%20the%20same%20time

Key demographic facts and trends

- In 2020, there were an estimated 727 million people aged 65 years or older in the world. That number is projected to double to 1.5 billion by 2050.
- Globally, the share of the population aged 65 years or older increased from 6 per cent in 1990 to 9 per cent in 2019. That proportion is projected to rise further to 16 per cent in 2050, when it is expected that 1in 6 people worldwide will be aged 65 years or older.
- Globally, the number of persons aged 80 years or older nearly tripled between 1990 and 2019, growing from 54 million to 143 million; it is projected to triple again between 2019 and 2050 to reach 426 million. Between 2019 and 2050, the number of persons aged 80 years or over is projected to show the largest percentage increases in East and South-East Asia and in North Africa and West Asia.

Pace of ageing:

- The pace of population ageing has been fastest in East and South-East Asia and in Latin America and the Caribbean. The percentage of the population aged 65 years or over has almost doubled in East and South-East Asia, rising from 6 per cent in 1990 to 11 per cent in 2019; and in Latin America and the Caribbean, increasing from 5 per cent in 1990 to 9 per cent in 2019. Between 2019 and 2050, the older population is projected at least to double in four regions: North Africa and West Asia; Central and South Asia; Latin America and the Caribbean; and East and South-East Asia.

Ageing trends:

- At the global level, life expectancy at birth has reached 72.3 years, with women on average living five years longer than men – 74.7 years and 69.9 years, respectively. The gender gap in longevity is the largest in Latin America and the Caribbean, with a difference of 6.5 years between women and men, and the smallest in Central and South-East Asia, with a gap of 2.7 years.
- Worldwide, it is estimated that a person who reached 65 years of age in 2015-2020 can expect to live, on average, an additional 17 years, reaching the age of 82. By 2045-2050, that figure is expected to increase to 19 years, reaching an average of 84.
- The highest life expectancy at age 65 is currently experienced by older persons from Australia and New Zealand (21 years for a life expectancy of 86), followed by Europe and Northern America (19 years for a life expectancy of 84). Between 2015-2020 and 2045-2050, life expectancy at age 65 is projected to increase in all regions. Although the survival of men is expected to improve, it is likely that women will continue to outlive men on average. As a result of the gender gap in longevity, older women currently outnumber older men across the age range – in particular, for those aged 80 years or older.
- Globally in 2019, there were 81 men for every 100 women aged 65 years or older, yet only 63 men for every 100 women aged 80 years or older. With the gender difference in longevity expected to narrow in future years, in 2050 it is projected that there will be 85 men per 100 women aged 65 years or over, and 71 men per 100 women aged 80 and above.

Source: World Population Ageing 2019

1.1. Everyone is ageing

Longer lives are one of the most remarkable collective achievements. Nevertheless, a major challenge in this demographic transition is the fact that ageing has often been understood as a burden on society entailing chores related to the growing demand on pensions, health and long-term care services. The World Health Organization (WHO) has described this multifaceted social phenomenon as ageism: "the stereotypes (how we think), prejudice (how we feel) and discrimination (how we act) directed towards others or oneself based on age".

Figure 4: Global report on ageism

Source: WHO

We all are ageing, and it is in our interests to change how we consider older generations, by focusing on the potential of their proactive participation in society, and hopefully our own in the near future. A longer life brings with it opportunities not only for older people and their families, but also for societies, as older adults are increasingly active participants and contributors to a country's development.

Nevertheless, WHO has highlighted that these contributions largely depend on one factor, which is health. Today there is little evidence to suggest that older people are experiencing their later years in better health than their parents. Moreover, good health is not distributed equally between and within populations.[2] A large number of older adults living in many regions are vulnerable. They have less access to social security, lower levels of income, less chance of taking advantage of new opportunities for entrepreneurship and employment and a higher prevalence of chronic diseases and functional dependence.

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[2]   For more information on the impact of health in ageing, visit WHO's ageing and health web site: https://www .who.int/news-room/fact-sheets/detail/ageing-and-health#:~:text=Common%20conditions%20in%20older %20age,conditions%20at%20the%20same%20time

Figure 5: World Report on Ageing and Health
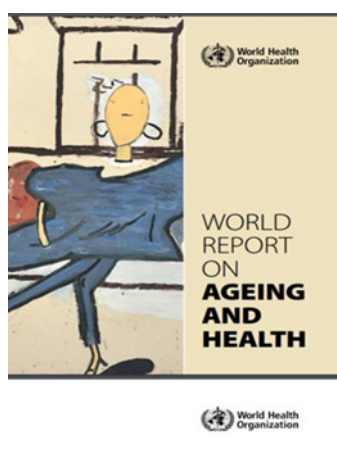
Source: WHO

It is therefore important to prioritize ageing as a global key policy issue. All policy-makers and stakeholders including governments, academia, companies, industries, and entrepreneurs need to seize the possibilities for development that ageing brings. Improvements in health conditions allow older adults to have a more productive longevity; moreover, a number of social, economic and business opportunities arise from this demographic revolution. The world is underestimating the potential development tracks and failing to foresee the consequences if population ageing is seen only as a challenge and not as an opportunity.

1.2. Healthy ageing

It is in this context that the United Nations declared 2021-2030 as the Decade of Healthy Ageing,[3] urging governments, civil society, international agencies, professionals, academia, the media and the private sector to concentrate their collaborative efforts to improve the lives of older people, their families and the communities in which they live.

Figure 6: Decade of Healthy Ageing
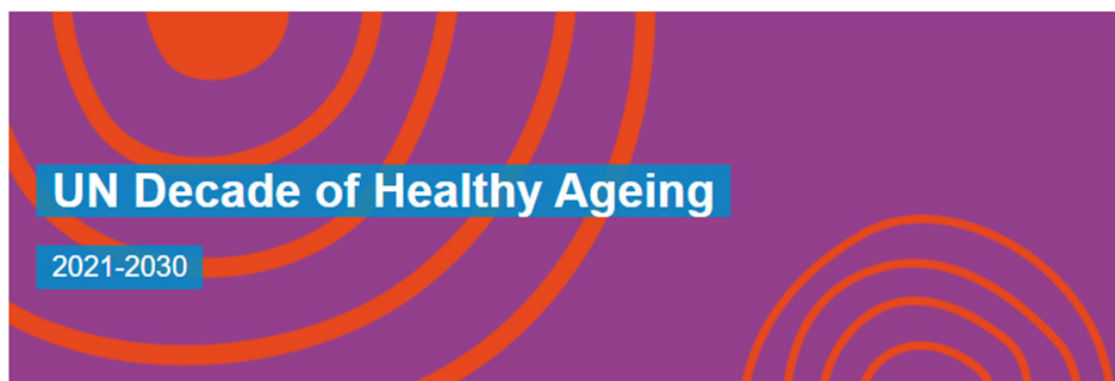
Source: WHO

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[3]   For more information on the decade of healthy ageing: https://www.who.int/ageing/decade-of-healthy -ageing

In line with the Madrid International Plan of Action on Ageing, 2002[4], Transforming our world: the 2030 Agenda for Sustainable Development[5] and the Global strategy and action plan on ageing and health 2016-2020[6], the strategy on ageing and health focuses on five strategic objectives:

1. Commitment to action on healthy ageing in every country.
2. Developing age-friendly environments.
3. Aligning health systems to the needs of the older population.
4. Developing sustainable and equitable systems for providing long-term care (home, communities, institutions).
5. Improving measurements, monitoring and research on healthy ageing.

Figure 7: Madrid International Plan of Action on Ageing, 2002

Source: United Nations, Department of Economic and Social Affairs

Healthy ageing refers to "the process of developing and maintaining the functional ability that enables well-being in older age."[7]This includes a person's ability to:

- meet their basic needs;
- learn, grow and make decisions;
- maintain mobility;
- build and maintain relationships; and
- contribute to society.

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4   https://www.un.org/en/events/pastevents/pdfs/Madrid_plan.pdf
5   https://www.unfpa.org/resources/transforming-our-world-2030-agenda-sustainable-development#:~:text=Transforming%20our%20World%3A%20The%202030%20Agenda%20for%20Sustainable%20Development,-Publication%20Date%3A%20September&text=This%20historic%20document%20lays%20out,people%2C%20and%20protect%20the%20planet.
6   https://www.who.int/ageing/GSAP-Summary-EN.pdf
7   Ageing: healthy ageing and functional ability: https://www.who.int/news-room/q-a-detail/ageing-healthy-ageing-and-functional-ability

Figure 8: GIF, spending your extra years
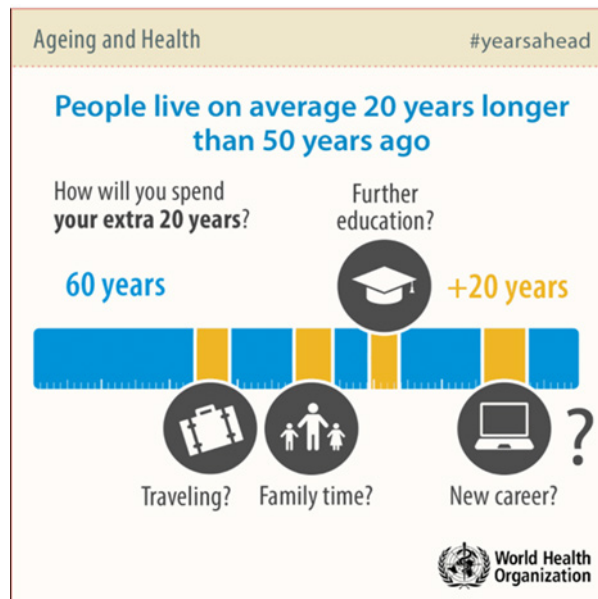
Source: WHO

Ageing is characterized by diversity, especially regarding health and people's intrinsic capacity. As defined by WHO, intrinsic capacity involves all the mental and physical capacities that a person can draw on, including their ability to walk, think, see, hear and remember. Some people may have high and stable intrinsic capacity while others may experience a decline in or significant loss of capacities and require support for basic activities.

That is why healthy ageing becomes such an important process as it involves developing and maintaining the functional ability that enables well-being in older age. According to WHO, functional ability is made up of intrinsic capacity of the individual, relevant environmental characteristics and the interaction between them.

1.3. Accessible and age-friendly environments

Healthy ageing is heavily influenced by environments such as the home, the community and the broader society, and by a range of factors within these environments. These factors include the built environment, people and their relationships, attitudes and values, health and social policies, the systems that support them, and the services that they implement. Being able to live in environments that sustain and maintain one's intrinsic capacity and functional ability is key to healthy ageing.[8]

Within this context, it is fundamentally important to take into consideration the recommendations that universal design principles offer to build accessible and age-friendly environments. The concept of universal design was developed in 1997 by a working group of architects, product designers, engineers and environmental design researchers in North Carolina State University, innovating principles aimed at mainstreaming and promoting the overarching goal of inclusiveness.

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[8]   World report on ageing and health: https://apps.who.int/iris/bitstream/handle/10665/186463/ 9789240694811_eng.pdf;jsessionid=0CCD763BC9D4653C476F5DF75D87FB1C?sequence=1

Their objective was to simplify the lives of all people by designing products and creating buildings and public spaces designed from the beginning to meet the variety of needs for access, communication and use of potential users. Addressing needs from the outset helps reduce costs or not having to contemplate subsequent costs.

Seven principles with specific guidelines were identified to enable the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design:

Principle one: Equitable use

• The design is useful and marketable to people with diverse abilities.

Principle two: Flexibility in use

• The design accommodates a wide range of individual preferences and abilities.

Principle three: Simple and intuitive use

• Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Principle four: Perceptible information

• The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Principle five: Tolerance for error

• The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Principle six: Low physical error

• The design can be used efficiently and comfortably and with a minimum of fatigue.

Figure 9: [Briefing Paper on Ageing-related Policies and Priorities in VNRs (2016-2019)](...)

Source: United Nations, Department of Economic and Social Affairs

Healthy ageing emphasizes the need for action across multiple sectors, according to a holistic approach that not only takes into account health issues but tackles them from different perspectives. This is to achieve the ultimate goal of creating age-friendly environments that respond to the diverse needs and aspirations of older generations and contribute to the economic and social development of the economy as a whole.

2. Digital transformation brings powerful socio-economic opportunities

We are living in a digital world. According to ITU data, 4.1 billion people were connected to the Internet in 2019.[9] For the past 50 years the use of ICTs has been increasing to the point that, currently they are embedded in every aspect of our life. This trend became even clearer during the COVID-19 pandemic as almost every activity has been transferred to a digital environment.

Public and private sectors, including all branches of government, entrepreneurs and small businesses, academia and other organizations have engaged in digital transformation. This implies serious rethinking to transform processes and communication channels and adapt to new market requirements.

The use of ICTs opens new and exciting opportunities for ageing adults. They can become the best enablers of healthy-ageing environments. Today we can connect with anyone, anywhere without the need to travel. We can have access to different products and services including learning and entertainment online. We can age healthily in our local environments and homes which can be adapted to our specific needs and requirements.

Figure 10: Digital transformation

Source: Pixabay

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[9]   ITU-D Statistics: https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

2.1. The role of ICTs and business opportunities in the context of ageing trends

ICTs can effectively enhance the business opportunities derived from the ageing revolution. Technology is the best equalizer of development opportunities for everyone, including for those who may have lost certain abilities. There is no doubt that promoting access to and the use of ICTs among older adults is essential to encourage a culture of healthy ageing. If the characteristics and needs of older adults are taken into consideration, ICTs can become one of the best enablers of their healthy ageing.

Furthermore, the ageing population represents a very attractive business opportunity, particularly for the technology industry. In 2017, the global market for elderly care technology was worth USD 5.6 billion. BCC Research estimates that it will reach a value of 13.6 billion by 2022, indicating a compound annual growth rate of 19.2 per cent, according to the report "Technologies for Long-term Care and Home Healthcare". The Silver economy has been considered as the new green by the Global Coalition on Aging which estimates that its market value amounts to USD 17 trillion..[10]

The longevity or silver economy, defined as the sum of all economic activity serving the needs of older adults, has grown in recent decades at a significant pace. According to the paper "The Longevity Economy: Generating economic growth and new opportunities for business" Americans over 50 years old spent USD 7.6 trillion on goods and services in 2018; this is projected to grow to 27.5 trillion by 2050.[11]

Figure 11: The Longevity Economy: Generating economic growth and new opportunities for business

Source: AARP and Oxford Economics

The Inter-American Development Bank recently published the report "The Silver Economy in Latin America and the Caribbean: Aging as an Opportunity for Innovation, Entrepreneurship, and Inclusion" , which states that "in Japan the longevity economy is estimated to be worth over USD 1.1 trillion, a figure that has doubled over the last 20 years and now accounts for almost half of all consumption. In the European Union, the silver economy has ballooned to EURO 3.7 trillion as of 2015 and is projected to reach 5.7 trillion by 2025 with an annual rate of 5 per cent. From 2015 to 2030, people over the age of 60 will be the source of nearly 60 per cent of all growth in consumption in cities in North-East Asia and in Western Europe. This same statistic is 30 per cent in Latin America and the Caribbean. According to these trends, the longevity economy could be an economic driver, playing a significant role promoting social and economic growth.[12]

Figure 12: The Silver Economy in Latin America and the Caribbean: Aging as an Opportunity for Innovation, Entrepreneurship, and Inclusion
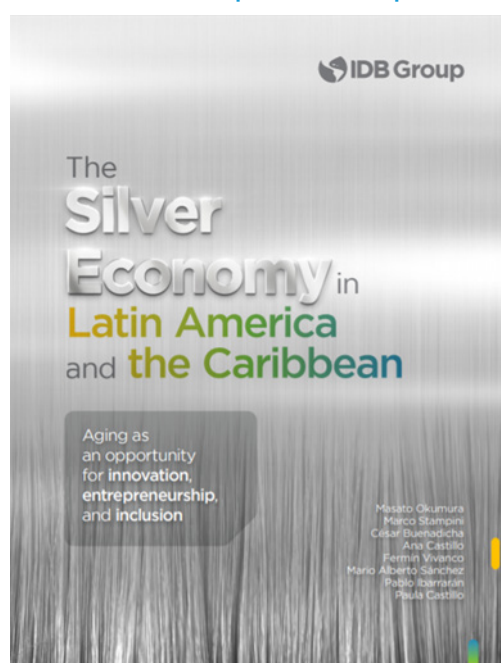
Source: Inter-American Development Bank

The ageing population offers a business opportunity from different points of view. On one hand, it represents a customer that could be buying for more years. On the other hand, it has valuable experience that could be leveraged for the benefit of younger generations and entrepreneurs, thus promoting intergenerational dialogue.

In particular, "age technology", namely all technological products and services designed with and for older adults, has huge potential to help boost development and inclusion. Companies, industries, academic institutions and entrepreneurs need to look into this unattended market which will keep on growing at an exponential rate thereby impacting labour and financial markets as well as the demand for goods and services.

It is key for countries to consider these opportunities and adapt and make adjustments. If societies anticipate and respond flexibly to ageing-related needs and preferences, they will most

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[12] The Silver Economy in Latin America and the Caribbean, IADB report: https://publications.iadb.org/publications/english/document/The-Silver-Economy-in-Latin-America-and-the-Caribbean-Aging-as-an-Opportunity-for-Innovation-Entrepreneurship-and-Inclusion.pdf

successfully take advantage of the ageing process, including the design and development of ICTs according to needs and requirements of older persons. To maintain clients, all industries need to think ahead about potential age-related conditions.

"This radical shift in emphasis should lead to conversations about how the chronic conditions associated with later life, which are the principal drivers of demand for health and social care, can be prevented or, at least, postponed. In place of the demographic despair behind many cost containment strategies is the potential for savings for reinvestment and, more importantly, substantial improvements in well-being and quality of life for eventually millions of people".[13]

2.2. Age-friendly technological environments to ensure well-being

The world is living today with a growing dependence on ICTs. Governments, enterprises, academia and entrepreneurs are all in the midst of implementing digital transformation processes in order to better serve their citizens and better adapt to new consumer trends where low physical contact will prevail. Nevertheless not all are taking into consideration the characteristics and needs of vulnerable groups, including older adults.

Digital literacy and inclusion are needed to ensure the potential enabling factor of ICTs. The key is to guarantee an inclusive environment which must take account of age-friendly technological considerations. Everyone in society is adapting to technology, but it is the role of developers and manufacturers to consider that not everyone adapts at the same pace.

For example, how many times is the software of a smartphone upgraded without a clear explanation of the changes to its owner? The simple fact of upgrading software without explaining the main changes can be confusing for some people and discourage them to use technology.

Technology changes all the time, but it is important to take current and future customers into account and explain clearly the evolution process. Issues related to the use of information, security and usability must be openly described in language for people that are not technologically savvy to create age-friendly environments.

As defined by WHO, healthy ageing includes meeting basic needs: learning, growing and making decisions; maintaining mobility; building and maintaining relationships and contributing to society. Including technology in the equation of those objectives can be the key to achieving them sooner and in a better way if the relevant considerations are taken into account in order to create age-friendly environments.

- **E-banking, e-commerce, e-health – meeting basic needs**

The digital transformation process has increased the range of products and services online. Businesses are changing their traditional models to digital ones and provide good opportunities for the ageing population to meet their basic needs.

A necessity as basic as the purchase of groceries can be done online thus enhancing the well-being of older generations by avoiding the need to use transport and to carry bags. Digital banking enables older adults to manage their savings independently without risk of exposure to

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[13] https://blogs.lse.ac.uk/politicsandpolicy/the-uk-needs-a-social-policy-on-ageing/

COVID-19 in bank branches during the pandemic. The use of health apps has increased as they have proven helpful for monitoring and preventing more serious conditions in older patients.

Nevertheless, the platforms should be well designed in order to make those processes easy to understand and trustworthy. A user-friendly customer service can also help those clients who are not familiar with digital platforms. Well-designed mobile application and websites that take into consideration universal design as well as the needs of the ageing population are important to ensure the transition of the group to online services and products.

- **E-learning and labour programmes that include everyone – learning, growing and making decisions**

E-learning platforms have now made education more affordable and have opened up more options for the population that may have an important impact on healthy ageing. Academia and learning programmes should provide options that might be of interest to this growing group of society. Online leaning platforms also need to be user-friendly to include or maintain the contributions of older teachers and mentors for the benefit of younger generations.

Communities may also take advantage of the working experience of the retired community. Entrepreneurs as well as young workers with little experience may leverage the opportunity of receiving the advice of retired people. With the use of digital platforms, this type of working relation is possible and available.

Companies and governments should work together to take advantage of this under-used source of learning and facilitate the contribution of older persons to society.

- **Alternative transportation means – maintaining mobility**

Physical mobility has never been as easy as in the digital world. New transport models are coming to the fore every day to cater for the different needs of society. Uber, for example, is a transport model that has had an impact on the consumer trends of millennials and on the global automobile industry by significantly reducing the buying of cars.

There is a great opportunity for transportation models to tackle the grey economy. Governments as well as private companies should develop programmes and services that solve the mobility problems of older persons. A shift in the perception of the use of ICTs by this growing percentage of the population must be achieved. The focus should be on the strengths and opportunities as opposed to the negative perception of attitudes and barriers associated with ICTs.

- **Online programmes and social networks – building and maintaining relationships and contributing to society**

Few social connections and feeling isolated have been associated with numerous health- related conditions. Social isolation is now viewed as a risk factor for premature death. For example, in the United States, it is estimated that USD 6.7 billion of federal budget expenditure is attributable to social isolation among older adults. [14]

Understanding the prevalence of social isolation and loneliness in older generations is important in two ways: first, in terms of the health impact on the population; and, second, in terms of the loss of economic and social potential. ICTs may offer effective solutions to both challenges.

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[14]   https://www.hrsa.gov/enews/past-issues/2019/january-17/loneliness-epidemic

Studies have shown how older adults who had Internet connection, proper devices, and were technologically literate prior to the COVID-19 pandemic, were far better positioned to deal with the reality of a sudden lockdown and having to be away from loved ones. Helping our elders use technology is an essential part of empowering them to thrive in challenging circumstances. Social networks may represent a very good business opportunity to attend this unserved need to maintain and create new relationships.

By way of example, a French non-profit organization started a programme during the pandemic which paired retired people, some of whom had been left isolated and alone, with language students. They engaged in conversation using video chat and established intragenerational links with mutual benefits, as students continued to practise their language skills while making older people feel more connected and empowered.[15]

Figure 13: United Nations Department of Economic and Social Affairs releases new report on ageing

Source: United Nations, Department of Economic and Social Affairs

With an ageing population, government officials need to take this reality into account and define clear strategies. While managing the pandemic, public health officials need to address in their messaging the potential risk of the unintentional consequences of social distancing.

Stakeholders need to get together and identify opportunities for older adults to engage in meaningful ways and to connect with helpful resources, services and programmes. ICTs are today's means of achieving these goals in a scalable and safe manner.

Nevertheless, alongside these opportunities, there is also a growing risk of increasing the digital gap and marginalization, as older generations are not using technology to its full potential or, in many cases, are being completely left behind.

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[15]   For more information on Share Ami programme: https://www.oldyssey.org/shareami#shareamiinterested

2.3. Key elements for the adoption of ICTs by older persons: digital inclusion and ICT accessibility

ICTs clearly have great potential to reduce social and economic inequalities affecting older people, but can also exacerbate pre-existing ones and even create new ones. All stakeholders and especially governments need to make sure that public policies promote the positive role of new technologies as they are tools that can create opportunities to encourage the inclusion of older persons in all areas of daily life.

In this context, digital inclusion is the key to promoting social and economic participation in the information society, particularly for older people. Digital inclusion refers to the ability of individuals and groups to access and use information and communication technologies regardless of their gender, age and location. To do so, digital inclusion requires the following basic elements: digital infrastructure, ICT accessibility and the adoption of technology.

Figure 14: Digital inclusion
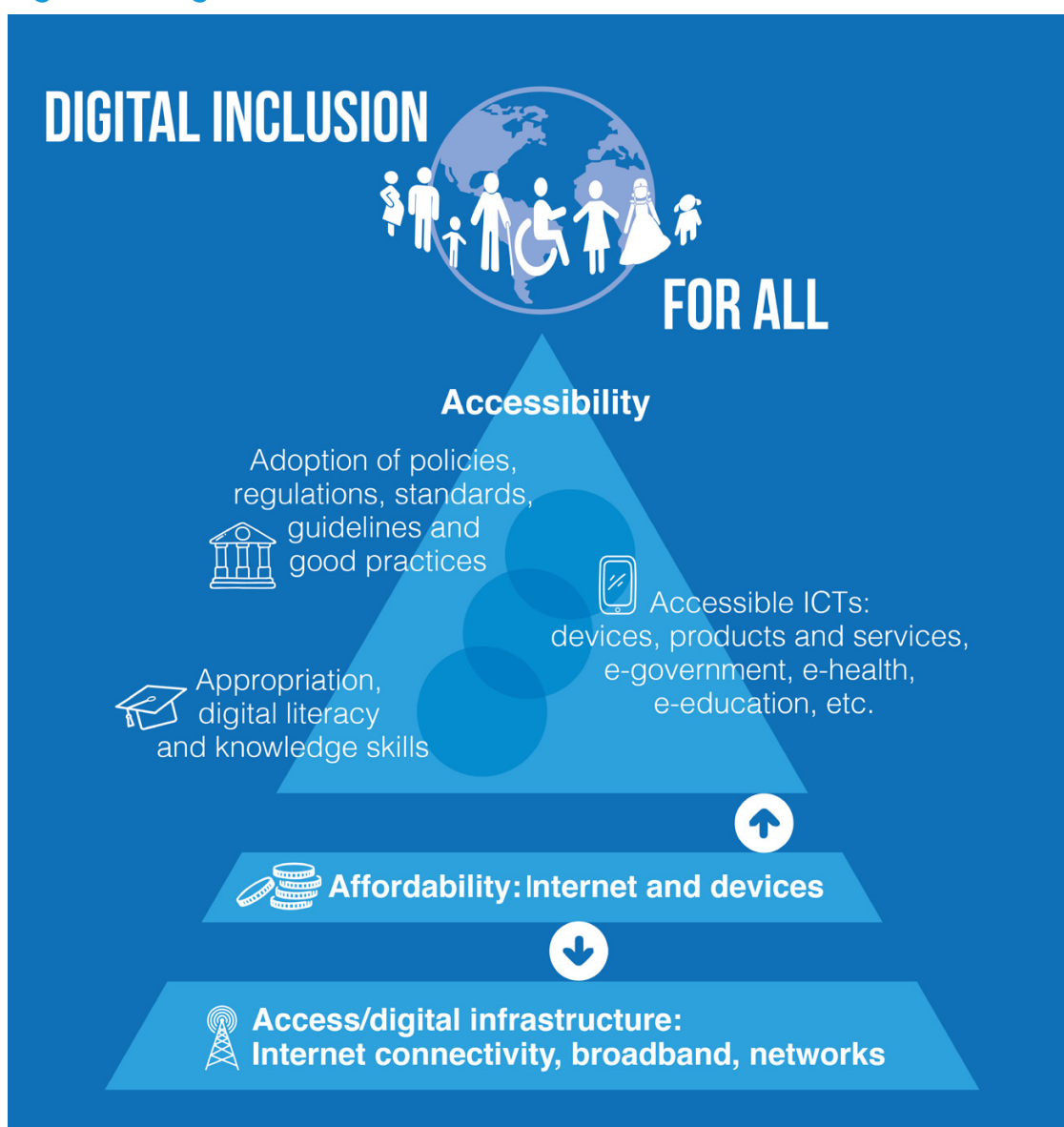
Source: ITU

Infrastructure:

Digital infrastructure comprises all the physical resources that are necessary to enable the use of data, computerized devices, methods, systems and processes. Internet connectivity refers to the means to connect people and machines.

Technically, digital infrastructure is an indispensable element through which companies, governments and institutions provide digital products and services. Nevertheless, and even if it is a fundamental component, digital infrastructure alone cannot ensure digital inclusion. Without ICT accessibility and adoption, connectivity will be the privilege of a reduced group of people.

ICT accessibility as a precondition for digital inclusion of older persons:

To ensure that everyone, regardless of age or ability can communicate, ICTs must be accessible, meaning that they are designed to meet the needs and abilities of as many people as possible, including the ageing population.

For example, in order to be inclusive, novel platforms and new ways of meeting should be usable by all. By being accessible, they allow everyone to work from home, provide access to distance education, including e-learning portals and courses, and create increased opportunities to use public health-care and assistance services, which are especially useful in disaster situations.

Accessible ICTs are the only way to increase opportunities for traditionally non-included and non-digital populations. Every stakeholder should consider that the rate at which technology and technologically specific language change may impact the abilities of older adults to engage with technology. This barrier could be eliminated simply by developing easier, clear and accessible information about ICTs.

With age, it is very common for older adults to experience some changes and limitations that may have an impact on their appropriation of ICTs; however, for different stakeholders they need not be an obstacle.

Throughout the world there are accessibility standards for ICTs. The Web Content Accessibility Guidelines (WCAG) are the most important standards regarding ICT accessibility and are recognized worldwide as such.[16] They are the guidelines of universal design applied in the digital world. These standards describe the design and programming characteristics that ICTs should have in order to ensure their usability by people with the broadest range of characteristics and capabilities, to achieve a specified goal in a specific context, including:

Reduction of visual capacity: Difficulties in reading and understanding texts written in small fonts can be a challenge for older generations. Websites and mobile apps should have zoomable text and should be compatible with the use of screen magnifiers and screen readers.

Reduction of hearing capability: In the case of hearing reduction, accessible content that includes options for communicating can be very useful, such as the availability of chats or messaging as an alternative to voice services. Accessible content should also take this into account and be compatible with hearing aid devices, for example, accessible smart TVs.

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[16] More information on ICT accessibility standards is available at the ITU-D Digital inclusion website https://www.itu.int/itu-d/sites/digital-inclusion/ and at the Web Content Accessibility Guidelines https://www.w3.org/WAI/standards-guidelines/wcag/

Reduction of motor ability: If older adults experience a loss in motor ability, an accessible ICT will allow them to interact with the product or service without the need for fine motor function or compatibility with an assistive technology. For example, large clickable areas that include labels, especially for smaller controls, such as radio buttons and checkboxes are an accessible feature that is important for people with limited dexterity.

Reduction of cognitive capabilities: Difficulty in finding specific information or in recognizing and accessing links can be commonplace. The implementation of usable and accessible designs should take these barriers into account. Accessible content can be easier to understand and accessible features such as reminders can also be very helpful.

Feeling worthlessness among family and society: Difficulties in communicating with the people responsible for websites or mobile applications is very common. Providing available and easy customer support channels is important in order to help all costumers.

Reduction of social contact resulting in isolation and sometimes depression: Training and education opportunities, peer-to-peer learning and support for sharing information are some activities that accessible ICTs may facilitate with a view to increasing social contact.

Loss of vitality: Some older adults may experience a loss of vitality. E-health apps can encourage fitness and monitor wellness.

By implementing and fulfilling WCAG standards, the above-mentioned age- related disabilities could be easily compensated for by technology and therefore policy-makers and stakeholders could ensure the socio-economic development of all members of society regardless of age or abilities.

Adoption of ICTs in the continuous evolutive context of the technology

Promoting the access and use of ICTs among older persons is essential for encouraging a culture of active and healthy ageing and is a basic third component for achieving digital inclusion. Although society is becoming increasingly tech-savvy, there is still an apparent digital divide between older and younger adults. This division usually relates specifically to new technology that came into general use after the generation of older adults reached adulthood.

As new technologies are developed, older adults may not adapt to new features or capabilities. Instead, they may continue using technology that was developed when they were young, even if it has been replaced by improved technology. Therefore, the digital divide is a moving target, changing with each generation. As described in the publication "Digital Technologies and Generational Identity ICT Usage Across the Life Course", each life stage can be defined by attitudes towards, and experiences of, digital technologies as these act as markers of generational differences and identity.[17] Data indicates a growing increase in the adoption of technology by older adults, especially in high-income countries. For example, according to the Pew Research Center in the United States, the share of adults aged 65 and over who owned smartphones had risen 24 per cent, from 18 per cent to 42 per cent, between 2013 and 2017.

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[17] For more information on Digital Technologies and generational identity: https://www.routledge.com/Digital-Technologies-and-Generational-Identity-ICT-Usage-Across-the-Life/Taipale-Wilska-Gilleard/p/book/9780367352455

Internet adoption among older persons had also risen steadily from 14 per cent in 2000 to 67 per cent of people aged 65 and older who said they went online in 2017.[18]

Even if those figures are replicated especially in developed countries, in general, older generations are still not as active in digital societies, which opens up an enormous opportunity to expand their Internet use.

Opportunities for technology use:

• **Physical**

Technology use is affected by physical barriers such as changes in skills or functions resulting from the normal ageing process. These include changes in the motor, cognitive, or sensory abilities. Older adults may not experience all these changes; however, each one may have a significant impact on their ability to use technology and therefore warrant careful consideration. ICT accessibility, especially with the advent of a market of accessible ICTs, is a big opportunity for developers and manufacturers to increase the demand for their technology.

• **Confidence**

Older adults generally accept technology; however, they are not as confident or self-sufficient as younger adults. Acceptance is a multifaceted issue particularly as it relates to the use of various types of technology (e.g. computers, assistive devices, e-mail programs). Technology acceptance is also affected by age, gender, learning history with technology, and attitudes towards use of technology. Technology acceptance models have two core constructs: perceived usefulness and perceived ease of use. Hence, to overcome this barrier, awareness, ICT accessibility and technology appropriation must be part of the strategy for targeting older adults.

The adoption of technology is fundamental in ensuring digital accessibility among older adults. Digital skills underpin nearly every aspect of work and life. From filling in a government form to communicating for work purposes, it is difficult to find a job or chore that does not require a basic level of digital functioning.

Policies aimed at familiarizing older persons with the Internet need to reflect their different lifestyles and learning approaches. There is no "one-size-fits-all" solution for this target group. Learning activities should focus on building confidence and dissipating mistrust about working with new technologies. Neutral and sympathetic sales advice on the most suitable devices and packages as well as educational support are needed.

The use of educational services increases the quality of ageing. Launching new technology products is often best achieved through educational programmes such as training. Therefore, training is expected to play a role as an underlying technique to help older people adopt technology.

Governments, policy-makers and all stakeholders should therefore make sure that their policies and programmes include all the above components of connectivity, ICT accessibility[19] and adoption to ensure the full digital integration of older persons. To advance in ICT accessibility implementation, all interested parties can use the ITU report "Towards building inclusive digital communities: ITU toolkit and self-assessment for ICT accessibility implementation".

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[18]   https://www.pewresearch.org/internet/2017/05/17/technology-use-among-seniors/
[19]   https://www.itu.int/pub/D-PHCB-TOOLKIT.01-2021

This toolkit is a valuable resource designed to help understand the principles of "what, why and how" of ICT accessibility, and its catalytic role in building inclusive digital communities and societies. It provides users with an immediate overview on the level of ICT/digital accessibility implementation in their respective country or organization, as well as with tailored expert advice and valuable guidelines aimed at supporting the development of appropriate policies and strategies.

3. ICTs as livelihood enablers to transform the vulnerable into valuable: Policy and strategy recommendations

3.1. New technologies and usability

The perception of the usefulness of a technology for a given activity will condition a person's degree of interaction with that technology and even their reluctance to use it. In this sense, the degree of Internet use will depend on how, by whom, and why it is used.

For example, during the pandemic, residential homes for older persons have had to find new ways to provide residents with social programming and opportunities to engage with other residents and family members who were not allowed to visit for several months. Some used YouTube channels and robots to engage with residents and help them communicate with family members, others used smart speakers to facilitate connection.[20]

In the United States, AARP and the National League of Cities launched the Covid-19 Older Adults Response Initiative, with the purpose of providing mayors, local leaders and community organizations information and resources to support their response. They shared innovative ideas and best practices through a digital platform.

Figure 15: COVID-19: Older people
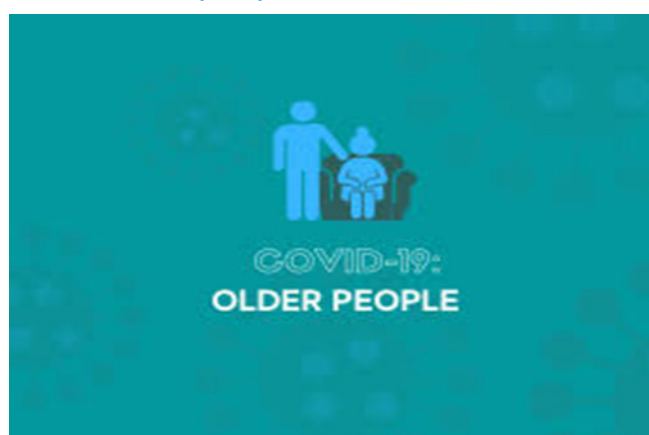
The older adult market presents a challenge and an opportunity for new technologies. Large players see a market opportunity worth seizing. In 2020, in the United States, Medicare Advantage plans began covering the costs of some home technology to help older persons remain independent. As a result, the use of digital health technologies, including remote patient monitoring and remote consultation, continued to grow.

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[20]   https://www.ageinplacetech.com/blog/covid-19-and-senior-living-s-growing-use-tech

Integrating social robots with sensors may help older persons to feel reassured and more confident about living alone. In addition, sensors in the home can determine when someone has fallen or had other accidents. The sensors can notify emergency services for help, again providing reassurance and building confidence in living comfortably at home.

For this softer side of care, the benefits of artificial intelligence (AI) may ultimately have a measurable impact on clinical systems. If AI can help older persons to care better for themselves, and to live at home for longer, resources in health-care facilities can be freed up.

In the town of Fujieda in Japan, older persons who were isolated during the COVID-19 outbreak were able to rent a social robot called PaPeRo from their municipality which used an AI-based speech recognition function. This helped older persons to have conversations, as well as to stay in touch with their relatives by exchanging text messages or photos. The robot can also be used to monitor their health by identifying changes in activity patterns.[21]

ICTs are a catalyst for economic and social growth as well as a bridge to the outside world while minimizing the impacts of isolation. Nevertheless, it is essential that content is created according to the needs of older persons. Including them in the process of developing products and services will be the key to achieving inclusive technological environments thereby promoting active and healthy ageing. Meeting these requirements will also create major investment and production opportunities.

United States: MIT AgeLab

Founded in 1999, MIT AgeLab was created to invent new ideas and creatively translate technologies into practical solutions that improve people's health and enable them to "do things" throughout their lifespan. Equal to the need for ideas and new technologies is the belief that innovations in how products are designed, services are delivered, or policies are implemented are of critical importance to our quality of life tomorrow. The MIT AgeLab is a multidisciplinary research programme that works with business, government, and NGOs to improve the quality of life of older people and those who care for them. The AgeLab applies consumer-centered systems thinking to understand the challenges and opportunities of longevity and emerging generational lifestyles to catalyse innovation across business markets.

United States: Aging2.0

Founded in 2012, Aging2.0 strives to accelerate innovation to address the biggest challenges and opportunities in ageing, including engagement and purpose; financial wellness; mobility and movement; daily living and lifestyle; caregiving; care coordination; brain health; and end of life. It fosters connections between investors, entrepreneurs, start-ups, corporations and academics through events, conferences, and activities in the media across 31 countries.

France: SilverEco.org

This international portal for the silver economy focuses on all technologies designed to help older people remain autonomous and independent, as well as products and services for ageing in general. The goal is to provide shareholders with a sector monitoring tool, to inform and allow industrials and service providers to present their offers and innovations in detail.

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[21] For more information on the Japanese pilot programme: https://www.euronews.com/2021/01/04/how -japan-is-using-technology-to-make-us-feel-closer-during-the-covid-19-pandemic

Policy recommendations and strategies:

- Policy and legislation in the ICT sector need to provide the necessary guidance to other governmental bodies in ensuring that their policy, regulations and strategies in relation to ICTs are inclusive and take into consideration the ageing population. This is key for new technologies to ensure that no one is left behind.
- Accessibility and usability standards must be revised and included in policies and regulations so that the industry, while developing new technologies, is not increasing the digital divide.
- Governments should work with academia and industry to create awareness of and training on these accessibility and usability standards.
- Governments, academia and industry should work with end users in order to ensure the quality and universality of new technologies.
- Policies, regulations and strategies should be revised periodically to incorporate the new technological trends into the accessibility and usability recommendations.

3.2. Financial wellness

According to the World Bank report "The Role of Digital Financial Inclusion in Preparing for Older Age and Retirement", the leading causes for financial exclusion among older adults are low digital capability and the absence of financial products covering their needs, which leads to vast numbers of people lacking the tools needed to prepare for the financial challenges of older age.

Figure 16: The Role of Digital Financial Inclusion in Preparing for Older Age and Retirement

Source: The World Bank

Financial needs are diverse in older generations. Some people may have a need for advice on how to manage their assets, some may require access to loans, others may find it difficult to use technological platforms for financial transactions. We all require financial services in different ways.

Furthermore, financial wellness is essential to achieving healthy living and is an area requiring special attention, particularly for older women. In many countries, pension payments are on average lower for women, sometimes too low to fully meet their basic needs.

In this context, "digital financial services can help to manage age-related difficulties, such as challenges with mobility and memory, including by facilitating banking from home. Tools such as electronic savings reminders (nudges) and automated savings deposits can also help people to better prepare for retirement".[22]

Nevertheless, it is important to highlight that financial exploitation is one of the most common forms of the abuse of older persons. It is therefore important to set strict consumer protection standards to ensure that digital financial services effectively benefit older persons. A few examples include:

- Automatic deductions that can increase savings and retirement funds.
- Credit and debit cards with accessibility features and consumer safety elements.
- Text messages to help people to save more money and reach their financial goals.
- Simplified statements including key financial information.
- Apps to help older adults with their financial management, including for setting up reminders and automatic bill payments, identifying relevant government benefits and alerting families about potential scams through monitoring credit reports and financial accounts for signs of suspicious or illegal activity.
- Digital technology can also be used to identify and prevent the financial abuse of older adults through tools such as two-method verification, voice recognition and facial recognition.

Public and private sector institutions are urged to understand the opportunities that this older generation offers for creating new services and products that should take into consideration the generation's special needs, particularly if they are provided through digital channels, in areas such as savings, insurance, reverse mortgages and pensions. Implementing technological solutions designed for older clients must include providing training to improve their financial and digital literacy.

United Kingdom: Age UK

Age UK has a platform with multiple services designed to cover older adults needs. It has a special section on money and legal issues which help users with benefits, managing money, avoiding scams and dealing with legal issues, through innovative online features such as a pension and a benefit calculator.

Hong Kong, China

According to the OECD report "Financial Consumer Protection and Ageing Populations", Hong Kong banks have introduced video teller machines through which bank staff at customer service centres can engage in real-time conversations with customers through videos and provide interactive banking services to customers.

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[22] https://www.financialcapability.gov.au/files/the-role-of-digital-financial-inclusion-in-preparing-for-older-age-and-retirement.pdf

Banks also set up voice navigation automated teller machines (ATMs) to enhance the accessibility of ATM services for customers with visual impairment, including older persons. Banks also provide simplified ATM cards, which make the options available at the ATMs easier to use, reduce the steps needed for cash withdrawal and display larger fonts on the screen. The cards are designed to help older persons and other customers with special needs to operate ATMs more easily.[1]

Figure 17: Financial Consumer Protection and Ageing Populations
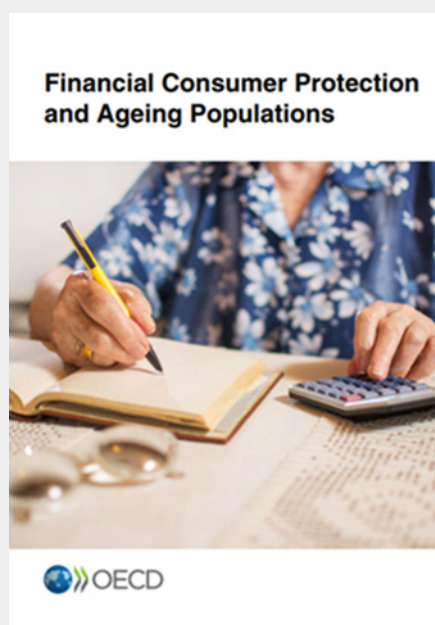
Source: OECD

Portugal

According to the same OECD report, the Portuguese National Plan for Financial Education, which is led by three financial supervisors in coordination with Banco de Portugal, aims to promote the financial literacy of the Portuguese population. One of its objectives for the period 2016-2020 was to deepen knowledge and skills in the use of digital financial services, namely by raising public awareness of digital financial services and security rules and of the risks in using those services, such as easier access to credit and impulse buying. In addition, Banco de Portugal has in place a digital financial literacy strategy, which is included in its Strategic Plan for 2017-2020. The aim of the plan is to empower bank clients in regard to the use of digital financial services, enlightening them on the secure use of digital channels and raising awareness of the features and risks of digital financial products.[2]

United States: True Link Financial

Founded in 2013, True Link Financial offers credit cards designed for older people. It allows the card functions to be personalized. For instance, the places where the cards can be used can be limited to prevent the fraud of older persons.

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[1]   www.oecd.org/finance/Financial-consumer-protection-and-ageing-populations.pdf
[2]   www.oecd.org/finance/Financial-consumer-protection-and-ageing-populations.pdf

Policy recommendations and strategies

Financial institutions are increasingly using digital channels as a means of offering products and services. If accessibility and usability are not a fundamental part of these digital solutions the ageing population will be excluded thereby jeopardizing their financial wellness and raising security concerns. If the end user needs a third person to interact with the technological service, sensitive information could be shared thus increasing the risks for older adults. Therefore:

- Government and industry should consult with the ageing population on the development of appropriation strategies.
- Measures should be taken to ensure that quality of service requirements take into account the specific needs of the ageing population, including the use of technical language to describe products and services.
- Governments with relevant stakeholders should build knowledge and understanding of age and ageing and stimulate intergenerational dialogue, learning and collaboration on the use of ICTs.
- The establishment of a committee with organizations of older persons should be encouraged to ensure that the views of older populations are heard.
- Policies and regulations (including procurement policies) should include accessibility and usability standards for ICTs.
- Polices and regulations should include safety conditions for the use of digital financial products and services taking into account the widest range of people able to use these services and products.
- Capacity building and training courses on accessibility, security and usability programmes should be developed to ensure the inclusion of all current and future users.

3.3. Education and lifelong learning

According to OECD,[23] lack of time, scheduling conflicts, distance constraints and lack of financial resources are among the key barriers mentioned by adults as the reasons for their non-participation in adult learning. Online learning can address these barriers.

The situation in the world in 2020 showed that technology is an ally for lifelong learning. In the United States, since 2001, the Osher Lifelong Learning Institutes (OLLI) have offered non-credit courses with no assignments or grades to adults over the age of 50. OLLI programmes are available at 120 universities and colleges throughout the United States. With the COVID-19 pandemic they switched to digital platforms. The OLLI programme in Duke University, one of the biggest programmes, reported an increase during the pandemic from 200 interested adults to 1 350 applications in two weeks for their online courses.

Programmes and policies that encourage lifelong educational resources and practices among older persons are needed. These cover education level; self-study in the form of reading manuals, reference books and journals; computer/Internet use, and use of the library; reading books for leisure; reading letters, notes and e-mails. Ways of applying information technology (IT) in teaching older persons are included. Lifelong education enables older people to gain self-confidence, show their creativity, and share their skills and experience. Education becomes a special need for older adults in terms of the realization and protection of their rights and clarifying their responsibilities, taking responsibility for their own destiny. Older people are the

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[23] OECD "The Potential of Online Learning for adults: Early lessons from the COVID-19 crisis" 24 July 2020 : https://read.oecd-ilibrary.org/view/?ref=135_135358-ool6fisocq&title=The-potential-of-Online-Learning-for-adults-Early-lessons-from-the-COVID-19-crisis

Figure 18: The Potential of Online Learning for adults: Early lessons from the COVID-19 crisis
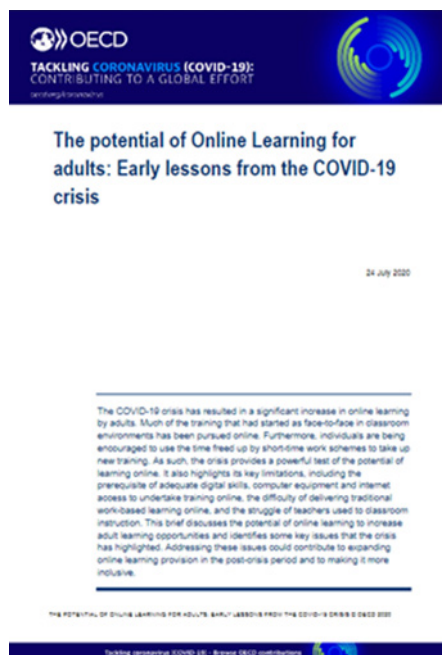
Source: OECD

most socially vulnerable group in need of a decent quality of life and health. Lifelong learning is "all learning activities undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective". [24]

There has been positive feedback from older adults attending lifelong learning activities. A by-product of these activities is the socialization experiences which add to the positive mind-broadening experience. Students evaluating their experience talk about the "joy of learning", refer to the "intellectual stimulation offered" and comment on how it "expands your life", and "gives meaning to life".[25]

Looking ahead, in order to foster an enabling environment for e-learning, it is important to:

• Develop digital skills to mainstream online learning.
• Motivate online learners as a key to retention.
• Develop material for older persons taking their interests into account.
• Train teachers to deliver online courses effectively and consider possible existing detractors.
• Ensure that training material is usable and accessible.

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[24] https://europa.eu.int/comm/education/policies/lll/life/what_islll_en
[25] Weinstein L, "Lifelong Learning Benefits Older Adults" Activities Adaptation & Aging, October 2004 https://www.researchgate.net/publication/233230399_Lifelong_Learning_Benefits_Older_Adults

Office of the Government Chief Information Officer
The Government of the Hong Kong Special Administrative Region
of the People's Republic of China

Hong-Kong, China : ICT programmes for older persons

The Office of the Government Chief Information Officer (OGCIO) has launched three rounds of an ICT Outreach Programme for older persons (Outreach Programme) to provide funding for NGOs to teach older persons to use tablets and other mobile devices and help them appreciate how digital technology can enhance their quality of life. With support from professional social workers and volunteers, the older persons received encouragement and assistance in adopting digital technology to broaden their social circles and integrate them into the community. In 2019, the Elderly IT Learning Portal was launched to help older persons learn about digital living and technology online.[1]

Argentina

The government of La Plata and the Ministry of Modernization of Argentina launched a digital literacy programme for older persons from August to October 2018 in different neighbourhoods, mainly at retirement centres. The programme was organized to support the objectives of the National Digital Inclusion Plan, which emphasizes the need for digital inclusion and accessibility for vulnerable populations.

As part of this programme, representatives from the Ministry organized a series of digital literacy events, including talks and workshops that focused not only on spreading ICT skills, but also on providing motivation for participants to embrace these tools. Workshops were made possible thanks to the support of local governments and "digital trainers" – volunteer students who received grants to finance their studies.

Participants learned about the following topics:

- First steps on the Internet
- Types of connections
- Web browsing
- Government web services
- WhatsApp and Facebook.

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[1]   https://www.ogcio.gov.hk/en/our_work/community/ict_programmes_for_elderly/2018-19 -training/

Policy recommendations and strategies

- Considering the impact on the well-being of the ageing population and the scalability of e-learning platforms, governments need to revise existing policies and legislation to add key definitions to promote ICT appropriation and accessibility by older adults.
- Universal access/service legislation should be revised to include ICT appropriation by older adults and accessibility as an explicit goal of universal access/service and universal access/service fund.
- Governments should develop mechanisms to incentivize and ensure the creation of learning material for older persons, including training on digital skills.
- Governments should create mechanisms to ensure the creation of opportunities for lifelong learning, particularly for older women.

3.4. Employment and work engagements

People are living and working longer than ever before. The age at which people retire has risen in many countries, leading to an increase in the overall labour-market participation rates of older generations and bringing new opportunities for business, workers and society. OECD has estimated that building multigenerational workforces and giving older employees greater opportunities to work could raise GDP per capita by 19 per cent over the next three decades.[26]

Extending working lives has enormous economic potential if governments and businesses seize the opportunity and build age-diverse working environments to ensure that the benefits of a multigenerational workforce are fully realized. By enabling flexible working conditions at any age, businesses and policy-makers can update social norms, access undervalued talent and create far-reaching economic benefits. Evidence shows that older workers can boost firm productivity through their experience and know-how and by enhancing team performance through the age and skill complementarities of younger and older workers. Unfortunately, the talent of older workers has been underutilized and overlooked.

Figure 19: Promoting an Age-Inclusive Workforce

Source: OECD

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26   http://www.oecd.org/employment/promoting-an-age-inclusive-workforce-59752153-en.htm

This is why, according to the OECD report "Promoting an Age-Inclusive Workforce", [27] in order to build on the benefits of ageing in the workforce, the right policies and practices from employers, governments and social dialogue need to be put in place. In this context, ICTs can be the most effective tool to implement most of the following:

Attracting and retaining talent at all ages: Eliminating age bias in recruitment practices and encouraging age-diverse cultures where all workers feel comfortable and appreciated regardless of age. Ensuring a good working environment and a healthy working life.

United States: Workforce50.com

Workforce50.com is an online job platform exclusively for people over the age of 50. Job seekers enter some basic information, like academic training or specializations, to find jobs that are a good fit. Employers pay a fee to post their job openings on the website. It also offers career services, for example, how to write a résumé or LinkedIn profile.

France: emploisenior.net

To boost the employment of older persons in France, this web platform was created to offer them job opportunities. The use of this service is free for applicants and private individual employers.

Ensuring a good working environment and a healthy working life: Offering flexible working options supports workers throughout their life and helps prevent burnout, manage family responsibilities and engage in learning. Telework needs to be carefully designed to meet the needs of workers and employers and maximize workers' well-being and productivity. In particular, workers of all ages need to have the digital tools and skills to work from home. Investing in employees' health and well-being at all ages is equally important. Well-being projects, which offer a blend of financial, physical and social and emotional programmes, need to be accompanied by other lifestyle and fitness measures.

The Global Coalition on Aging (GCOA)

GCOA devised the "Guiding Principles for Age-Friendly Businesses", which include principles regarding age-neutral workplaces that recognize the potential contribution of employees at all ages and the value of a multigenerational workforce. The principles encourage an inclusive environment and discourage age-related discrimination or hostility. They also encourage supportive working environments that provide technology, facilities, equipment and services conducive to access and contribution regardless of age.

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27 https://www.oecd-ilibrary.org/docserver/59752153-en.pdf?expires=1608617049&id=id&accname=guest&checksum=456A61FD547554F1ADB427C999EDEC94

Developing and maintaining skills throughout careers: As people increasingly extend their working lives, it is key to promote the continual development of their skills throughout their careers. Maintaining skills over the lifecycle through lifelong learning and training improves organizational performance thereby delivering a skilled workforce, underpinning productivity and efficiency, building the platform for innovation, and increasing employee motivation. Promoting entrepreneurship is also an effective way to take advantage of the know-how of older generations.

European Union: Senior Entrepreneurship Action Programme

"Empowering entrepreneurial skills and unleashing potential of unemployed older persons – MYBUSINESS project" was intended to promote senior entrepreneurship, healthy ageing and reintegration into the labour market of people over the age of 50. It achieved this through the creation of a tailored training and mentoring methodology, based on the identified needs of older persons, with a view to offering them a basic knowledge of business skills and the motivational thrust required for the creation of their own businesses and development of their entrepreneurial skills and mindset.

Japan

The Kanagawa prefecture offers services and support for older people who consider themselves entrepreneurs. It offers three spaces where older people can pitch their business ideas and work on them. To encourage older entrepreneurs, it holds an annual contest for potential entrepreneurs over the age of 55. It has also published an entrepreneurship guide for older people, with 32 examples of local older entrepreneurs.

Policy recommendations and strategies

Persons over 50 years of age bring maturity, experience and common sense thanks to their work background. This means that they will offer greater skills in certain areas, as well as consistency in their performance. In general, an older person has a greater sense of responsibility, emotional control and temperance, as well as a high degree of loyalty to the company and its team members.

- Governments with different stakeholders should foster the creation of programmes and policies that guarantee access to information and communications technologies and assistive technologies to promote age diversity, improve workplace health and safety and assist individuals to extend their working lives in decent work, including through support for retraining and assistance in finding jobs.
- Monitoring processes should be put in place to evaluate actions and implement best practices.

3.5. Healthy lifestyles, wellness and independent living

ICTs and AI are changing our lives. This is especially true for wellness and independent living. In the housing sector, for example, ageing leads to a demand for housing designed to allow older people to live independently despite their functional limitations (impaired sight, hearing, or mobility between rooms). A growing proportion of older persons and people with disabilities in the developed countries are improving their homes with a multisensor system based on artificial intelligence (AI), advanced telecommunications and information technology. The habits and behaviour of these population groups is recorded without disrupting their daily routine. AI will diagnose any abnormal behaviour or change, and the system will warn the professionals. Gerontology issues are also covered as part of the multisensor system, the AI-based learning and diagnosis methodology and the main functionalities.

In cities, IT increases the demand for public services adapted to people with impaired mobility. In the health industry, IT expands the market for services that prevent and manage chronic diseases, and loss of autonomy heightens the demand for care services.

One of the most promising areas is tourism. In the countries furthest along in demographic transition, businesses have developed packages tailored to older people's mobility needs, with different schedules and trips during the off-season. These age-friendly services can attract demand from mid- to high-income older people from other countries. Silver tourists are notable as an emerging segment because they have higher discretionary income and more time. Medical tourism also holds potential for this group.

United States: Rendever

Founded in 2015, Rendever brings images with virtual and augmented reality to older people who have difficulty leaving the house. Using a device designed for this service, customers can enjoy images of places ranging from those associated with personal memories, like houses where they used to live, their favourite parks and wedding ceremonies, to travel destinations like Machu Picchu and Paris.

Infrastructure-related challenges, especially in the areas of mobility and transportation, bring major investment opportunities. Public transportation needs to be adapted to be more age-friendly. These adaptations can also create an opportunity for new services like transportation in autonomous vehicles or home food deliveries.

United States: GogoGrandparent

GoGoGrandparent connects older people with ride-sharing services like Lyft. It also provides for services for meals, groceries and medications. It aims to create a virtual care platform that will delay or even eliminate the need to hire a care agency or move into a retirement community.

United States: Onward

Onward was founded in 2018 to help older persons get reliable, safe, door-to-door rides. Unlike regular "kerb-to-kerb" ride-hailing services, Onward's drivers get out of the car to pick up their passengers from where they are, escort them into the car, and upon arrival at their destination, walk with them to wherever they need to be, sometimes waiting until they finish doing errands or medical appointments. Most of their drivers are retirees. Being Onward drivers allows them to create their own work schedule and know in advance how many hours they are going to work and how much money they are going to make.

Many older people, especially those suffering from chronic diseases and functional limitations, depend to some degree on long-term care and need support services in addition to health services. People can be considered dependent on care when they have difficulty performing daily activities (basic or instrumental) like eating, getting dressed, or moving around the house.

As more older people need long-term care, developing these services becomes an opportunity. Currently, most of this demand is met by the women in families who put aside their work to care for their older loved ones. Well-designed policies can channel this demand towards a new industry with new jobs, as has been the case in Republic of Korea or Japan.

Older persons of the modern world need technological solutions in a variety of areas from health monitoring to retirement savings planning. More and more companies are actively working on creating apps specifically for people over 60 years of age, and investors show great interest in such projects.

Currently, the most widely used categories of apps for older persons include:

- Paramedical apps that offer solutions such as reminders for taking medications, medication guides, disease symptom monitoring systems, remote medical advice, taking care of close relative;
- Adaptive apps that are designed for an audience with hearing, visual and other disorders;
- Informational apps on social services or leisure information for older persons;
- Entertainment apps including for stress relief, memory training and improving cognitive abilities.

Mobile apps that enhance an independent lifestyle:
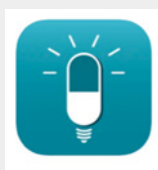
My Therapy: medicine alarm
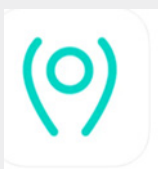
Cuiper: allows the user to find a caregiver nearby.

Go4Life: 15- minute exercise routines available for free on You Tube

Policy recommendations and strategies

- Governments should develop national and/or subnational programmes on age-friendly cities and communities and engage with communities, older people and other stakeholders, including the private sector and civil society, in designing these programmes.
- Accessibility and usability standards should be included in policies and programmes in order to ensure universal solutions.
- Multisectoral mechanisms should be put in place at national and subnational levels to promote the use of ICTs for healthy ageing.
- Governments should revise policies and regulations to foster an environment which incentivizes the use of accessible ICTs that create opportunities for leisure and social activities to facilitate inclusion, participation and reduce loneliness and social isolation.

3.6.   Health care and health service delivery

Population ageing drives up the demand for health services at all levels. This trend has financial implications for governments and families. Recent events related to COVID-19 have underscored the physical vulnerability of older generations, which die from the virus at a higher rate.

The rising demand for health services necessitates an expansion of supply at all levels, but especially at the primary level, including of telemedicine for managing chronic diseases. Investments in preventive medicine, healthy diets or physical exercise for active ageing are also needed.

Key enablers for tech adoption	Key barriers to tech adoption
ICT interoperability - including family and care-givers of patient	Device ownership and trust of technology
Recommendations for zero effort technologies (specialized training)	Availability of standardized training programmes
Smartphone-wearables to track wellness and motivate activity	Perceived value and training among older users
Medicare Advantage reimbursement changes to support device use	Device management forced obsolescence, upgrades, software versions
Discounts available for broadband (low income)	Standard price of home broadband
Voice First (Amazon speakers, Google Assistant) broad visibility, deployment	Concerns about privacy because of always-listening devices

United States: Pillo Health

This company was founded in 2015 with the purpose of making even the most complex health routines simple. Using a combination of adaptive AI and thoughtfully designed hardware, their proactive and secure digital health companion offers enterprise solutions that bring health care into the home.

Japan: Logos

Founded in 1996, Logos develops solutions using Pepper, Softbank Group's humanoid robot. One of its proposed solutions is the Mainich Robo Lec for long-term care centres. The robot Pepper offers entertainment programs, like riddles, music or basic conversation, among other things, and personalizes the content with cumulative data and face recognition.

United States: Carely

Founded in 2013, Carely offers an application for families whose older members live in care facilities. The application has features designed for those families, like communication with care providers, health status updates, and so on.

Policy recommendations and strategies

- Universal Health Coverage (UHC) is part of the Post-2015 Agenda for Development geared to meeting the Sustainable Development Goals. Goal 3 "Ensure healthy lives and promote well-being for all at all ages" and its Target 3.8 relating to UHC cannot be achieved without the support of e-health.
- E-health solutions need to reflect the needs of health professionals and citizens —each and every citizen. If these platforms are not accessible, they will increase the digital divide and inequalities thus creating a barrier to attaining UHC.

- ICTs should be available, affordable and accessible. An accessible ICT is different from an available ICT. Health applications should be available for everyone, and affordable if they are meant to be used by underserved communities and people with low-income levels, as well as accessible if they are to be used by persons with disabilities, older adults, persons with a temporary disability, immigrants, or in countries where more than one language is spoken.

- Governments should revise and update policies and regulations to ensure that all the digital health solutions are accessible and usable for all. This includes person-centred, integrated health and social care, including for people with dementia.

- The legal framework for emergency communications should also be revised to ensure service accessibility and appropriation by the ageing population.

4. Conclusions

Ageing in a digital world offers the best and widest range of opportunities for really taking advantage of all the valuable contributions that older generations can offer societies leaving behind the idea that they are a vulnerable group.

If governments and all stakeholders consider the possibilities offered by ICTs and forge policies and strategies based on the promotion of healthy ageing, technological environments and the digital inclusion of older persons and all its benefits will become a reality.

Furthermore, investing in healthy ageing, using ICTs as a scalable means of providing the necessary services and products, will, in the short run, considerably reduce governmental and family costs. The well-being of the ageing population translates into better mental and physical health that directly impacts on public and private costs.

4.1. The role of the different stakeholders

If all stakeholders work together towards the inclusion of older adults in the digital economy everybody wins. There are gains in the short run and the long run.

In the short run, ICT products and services designed for all will be able to reach an unattended market of potential users that research has proven are not against the use of technology but are being excluded because of their lack of digital know-how.

In the long run, with a population that is ageing, good practices in designing for everyone and digital inclusion along with programmes and activities that include the ageing population will translate into social and economic growth in addition to savings for society through preventive medicine and knowledge of citizens' well-being.

- **Governments**

Digital inclusion will allow all citizens to fully participate in the economy.

By promoting and regulating digital inclusion, governments will reduce inequalities and ensure that all citizens, including older adults, can actively participate.

Governments can lower the costs of preventive health by having scalable e-health services used by every member of society, especially older persons.

Policies and programmes should be devised to encourage the economy to create job opportunities for older persons.

- **Industry and the private sector:** Industry will have access to a market estimated to be worth USD 17 trillion.[28] By understanding that developing and designing products and services that are usable and accessible for all, the private sector will expand its customer relationship dramatically. All consumers will grow old.

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[28]   https://www.itu.int/en/myitu/News/2020/08/11/14/28/Technology-for-All-Global-Coalition-on-Aging-WSIS

Technology changes at a rapid rate. Industry must learn to use language that is understandable by all. The adoption of technology by older persons is more likely to happen if technology is explained in simple rather than technical terms. The evolution from one service to the next generation needs to be explained and described to these customers. Perhaps a user manual with visual graphics that accompanies the device might facilitate matters.

Designers and developers should take into consideration the age-related conditions that can become a barrier to appropriation. Accessibility guidelines must be taken into account when designing new products and services.

Awareness campaigns on privacy and security issues with other stakeholders are important for creating an environment of trust in the digital world.

- **Academia**

Participation in lifelong learning has effects upon a range of health outcomes: well-being; protection and recovery from mental health difficulties; and the capacity to cope with potentially stress-inducing circumstances, including the onset and progression of chronic illness and disability.

Universities play an important role by offering courses for adult learners. Today the costs of such courses can be reduced with the use of digital platforms. Older adults with different backgrounds and experience can also offer peer-to-peer training and lead training courses.

Academia also has the educational means to change people's mindset and to influence students to be inclusive in the design of products and services.

Academia plays a major role in developing new and innovative ICT solutions for the digital inclusion of ALL.

4.2. Summary of policy recommendations

In line with the healthy ageing agenda,[29] and taking into account the digital inclusion strategies and policy recommendations provided by ITU-D,[30] the following policy recommendations should be considered by all Member States to ensure the use of inclusive and accessible ICTs to foster the economic and social development of this growing sector of the population:

- Revising existing ICT policies, legislation and regulations to promote ICT appropriation and accessibility.
- Consulting with the ageing population on the development of appropriation strategies.
- Adopting ICT accessibility technical and quality of service standards in order to guarantee the use of technology by older persons with age-related sensory and cognitive conditions.
- Adding and revising key ICT legislation definitions to promote ICT appropriation and accessibility.
- Amending the universal access/service legal and regulatory framework to include ICT appropriation by older adults and accessibility as an explicit goal of universal access/ service and the universal access/service fund.

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[29] https://www.who.int/docs/default-source/decade-of-healthy-ageing/final-decade-proposal/decade -proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc_5
[30] https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/default.aspx

- Ensuring that quality-of-service requirements take into account the specific needs of the ageing population, including the use of less technical language to describe products and services.
- Revising the legal framework for emergency communications to ensure emergency services' appropriation by the ageing population and its accessibility.
- Establishing a committee with organizations of older adults in order to develop standards related to usability, accessibility and appropriation of ICTs. Supporting inclusion of the voices of older adults, particularly in disenfranchised and marginalized groups, in multisectoral and multistakeholder platforms, processes and dialogues. ICTs are essential in facilitating this process.
- Establishing or extending multisectoral mechanisms at national, subnational and local levels to promote the use of ICTs for healthy ageing.
- Promoting and developing national and/or subnational programmes on age-friendly cities and communities, and engaging with communities, older people and other stakeholders, including the private sector and civil society, in designing these programmes.
- Building knowledge and understanding of age and ageing and stimulating intergenerational dialogue, learning and collaboration on the use of ICTs.
- Devising programmes and policies that guarantee access to information and communication technologies and assistive technology in areas such as:

  o sustainable mobility;

  o opportunities for leisure and social activities to facilitate inclusion, participation and reduce loneliness and social isolation;

  o training to improve financial and digital literacy and support in income security throughout the lifecycle, and to protect older people, particularly women, from poverty, including through access to adequate social protection;

  o opportunities for lifelong learning, particularly for older women;

  o promoting age diversity, improving workplace health and safety, and assisting individuals to extend their working lives in decent work, including through support for retraining and assistance in finding jobs;

  o person-centred, integrated health and social care, including for people with dementia; and

  o services to improve health literacy and self-management, and increase the opportunities for physical activity, good nutrition and oral health.

- Monitoring and evaluating actions to implement what works.
- Build accessible and age-friendly environments.

Information and communication technologies, if built with universal design in mind can make a fundamental difference in creating accessible, inclusive, and age-friendly digital environments and communities. ICTs can further enable everyone to live a healthy and active later life, participate in – and make longer socio-economic contributions to – the society, and thus empower all to live their lives to the full.

4.3. Resources

ITU-D offers a number of resources that help Member States to understand digital inclusion, digital skills and ICT accessibility.

From ITU

- ITU-D work in ICT Accessibility
- Digital Skills Toolkit

From ITU-D: training courses and knowledge development on ICT accessibility

- ICT Accessibility: The Key to Inclusive Communication - self paced online training
- Web Accessibility :The Cornerstone of an Inclusive Digital Society - self paced online course
- Model ICT Accessibility Policy Report
- Towards building inclusive digital communities: ITU toolkit and self-assessment for ICT accessibility implementation

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Office of the Director
International Telecommunication Union (ITU)
Telecommunication Development Bureau (BDT)
Place des Nations
CH-1211 Geneva 20
Switzerland

Email: bdtdirector@itu.int
Tel.:   +41 22 730 5035/5435
Fax: +41 22 730 5484

Office of Deputy Director and Regional Presence
Field Operations Coordination Department (DDR)
Place des Nations
CH-1211 Geneva 20
Switzerland

Email: bdtdeputydir@itu.int
Tel.:   +41 22 730 5131
Fax: +41 22 730 5484

Digital Networks and Society (DNS)

Email: bdt-dns@itu.int
Tel.:   +41 22 730 5421
Fax: +41 22 730 5484

Digital Knowledge Hub Department (DKH)

Email: bdt-dkh@itu.int
Tel.:   +41 22 730 5900
Fax: +41 22 730 5484

Partnerships for Digital Development Department (PDD)

Email: bdt-pdd@itu.int
Tel.:   +41 22 730 5447
Fax: +41 22 730 5484

Africa

Ethiopia
International Telecommunication Union (ITU) Regional Office
Gambia Road
Leghar Ethio Telecom Bldg. 3rd floor
P.O. Box 60 005
Addis Ababa
Ethiopia

Email: itu-ro-africa@itu.int
Tel.:   +251 11 551 4977
Tel.:   +251 11 551 4855
Tel.:   +251 11 551 8328
Fax: +251 11 551 7299

Cameroon
Union internationale des télécommunications (UIT)
Bureau de zone
Immeuble CAMPOST, 3e étage
Boulevard du 20 mai
Boîte postale 11017
Yaoundé
Cameroon

Email: itu-yaounde@itu.int
Tel.:   + 237 22 22 9292
Tel.:   + 237 22 22 9291
Fax: + 237 22 22 9297

Senegal
Union internationale des télécommunications (UIT)
Bureau de zone
8, Route des Almadies
Immeuble Rokhaya, 3e étage
Boîte postale 29471
Dakar - Yoff
Senegal

Email: itu-dakar@itu.int
Tel.:   +221 33 859 7010
Tel.:   +221 33 859 7021
Fax: +221 33 868 6386

Zimbabwe
International Telecommunication Union (ITU) Area Office
TelOne Centre for Learning
Corner Samora Machel and
Hampton Road
P.O. Box BE 792
Belvedere Harare
Zimbabwe

Email: itu-harare@itu.int
Tel.:   +263 4 77 5939
Tel.:   +263 4 77 5941
Fax: +263 4 77 1257

Americas

Brazil
União Internacional de Telecomunicações (UIT)
Escritório Regional
SAUS Quadra 6 Ed. Luis Eduardo
Magalhães,
Bloco "E", 10º andar, Ala Sul
(Anatel)
CEP 70070-940 Brasilia - DF
Brazil

Email: itubrasilia@itu.int
Tel.:   +55 61 2312 2730-1
Tel.:   +55 61 2312 2733-5
Fax: +55 61 2312 2738

Barbados
International Telecommunication Union (ITU) Area Office
United Nations House
Marine Gardens
Hastings, Christ Church
P.O. Box 1047
Bridgetown
Barbados

Email: itubridgetown@itu.int
Tel.:   +1 246 431 0343
Fax: +1 246 437 7403

Chile
Unión Internacional de Telecomunicaciones (UIT)
Oficina de Representación de Área
Merced 753, Piso 4
Santiago de Chile
Chile

Email: itusantiago@itu.int
Tel.:   +56 2 632 6134/6147
Fax: +56 2 632 6154

Honduras
Unión Internacional de Telecomunicaciones (UIT)
Oficina de Representación de Área
Colonia Altos de Miramontes
Calle principal, Edificio No. 1583
Frente a Santos y Cía
Apartado Postal 976
Tegucigalpa
Honduras

Email: itutegucigalpa@itu.int
Tel.:   +504 2235 5470
Fax: +504 2235 5471

Arab States

Egypt
International Telecommunication Union (ITU) Regional Office
Smart Village, Building B 147,
3rd floor
Km 28 Cairo
Alexandria Desert Road
Giza Governorate
Cairo
Egypt

Email: itu-ro-arabstates@itu.int
Tel.:   +202 3537 1777
Fax: +202 3537 1888

Asia-Pacific

Thailand
International Telecommunication Union (ITU) Regional Office
Thailand Post Training Center
5th floor
111 Chaengwattana Road
Laksi
Bangkok 10210
Thailand

Mailing address:
P.O. Box 178, Laksi Post Office
Laksi, Bangkok 10210, Thailand

Email: ituasiapacificregion@itu.int
Tel.:   +66 2 575 0055
Fax: +66 2 575 3507

Indonesia
International Telecommunication Union (ITU) Area Office
Sapta Pesona Building
13th floor
Jl. Merdan Merdeka Barat No. 17
Jakarta 10110
Indonesia

Mailing address:
c/o UNDP – P.O. Box 2338
Jakarta 10110, Indonesia

Email: ituasiapacificregion@itu.int
Tel.:   +62 21 381 3572
Tel.:   +62 21 380 2322/2324
Fax: +62 21 389 5521

CIS

Russian Federation
International Telecommunication Union (ITU) Regional Office
4, Building 1
Sergiy Radonezhsky Str.
Moscow 105120
Russian Federation

Email: itumoscow@itu.int
Tel.:   +7 495 926 6070

Europe

Switzerland
International Telecommunication Union (ITU) Office for Europe
Place des Nations
CH-1211 Geneva 20
Switzerland
Email: eurregion@itu.int
Tel.:   +41 22 730 5467
Fax: +41 22 730 5484