

Exploration and Implications of Digital Inclusion Practices for Older Adults Abroad Within the Digital Ecosystem Framework

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Abstract

As more people around the world are getting older, making sure older adults can use digital stuff has become a really big deal that lots of people are talking about. This study looks at what other countries are doing with digital inclusion for older adults and tries to learn from their experiences to help make older people better at using technology and build a society where everyone can participate online. Using ideas from social ecosystem theory, Bourdieu's capital theory, and the Technology Acceptance Model (TAM), this study developed a framework for how older adults get included in the digital world. This framework has four parts: getting support from other people, having good government rules, getting money help, and getting tech help. The study used surveys and looked at content to check out successful ways countries like Singapore, Sweden, Denmark, and South Korea include older adults in the digital world. The results show that including older adults needs everyone to work together, including people in social circles, government systems, having enough money, and doing tech stuff. Based on what's happening in China right now, this study suggests a few things, like making digital products for older people better and having more ways for different groups to work together. Also, it suggests making government policies that help older people and digital education work together better, and getting the market more active to give older people more money to help them use digital stuff.

Keywords

Digital inclusion; The elderly; Digital ecosystem; Elderly-oriented reform.

1. Introduction

With the rapid development of digital technologies and healthcare, population aging has become a global trend. According to the World Population Prospects 2024 released by the United Nations, the global population aged 65 and above is projected to reach 2.2 billion by the late 2070s, exceeding the population under 18 years old [1]. In China, the Seventh National Population Census reported that people aged 60 and above accounted for 18.70% of the total population, indicating an increasingly aging society [2]. As public services and daily life become increasingly digitalized, promoting digital inclusion for older adults has become essential for reducing the digital divide and ensuring equitable participation in the digital society.

Digital inclusion generally refers to ensuring equitable access to digital technologies and the capabilities required to benefit from them. Existing studies have examined digital inclusion from the perspectives of technology access and use [3], social participation [4], support for digitally disadvantaged groups [5], equal access to public services, and digital divide reduction [6]. As one of the most digitally vulnerable groups, older adults have attracted growing scholarly attention. Before, people looked into how older adults use the internet and digital stuff [7,8], what makes some people have more access than others [8,10], what factors affect it [11,12], what governments do to help [13], and how it's different in different places [14,15]. Other countries, like the US [16], the UK [17], Australia [18], and Singapore [19,20], have also

shared what they've learned. But most studies just look at one country or one specific program, and we still don't have good, organized comparisons between countries using a consistent way of looking at things [21].

So, to fill this gap, we're looking at how Singapore, Sweden, Denmark, and South Korea do things with digital inclusion. These places are among the top countries according to the Roland Berger Digital Inclusion Index [22]. Using some theories, like social ecosystem theory, Bourdieu's capital theory, and the Technology Acceptance Model (TAM), we developed a framework with four parts: social support, policy backup, money help, and tech support. We're using this framework to check out how other countries do digital inclusion for older people and to give some ideas for policies to help make China a more inclusive digital place.

2. Research Design

2.1. Analysis Framework

With the help of some ideas on how society operates together, what different types of possessions people have (such as money and knowledge), and how readily new technologies are accepted (that TAM concept), this study has found a way to examine how older adults fit into the digital world. The four are to be considered in order to get help from others, to be subject to good government regulations, to obtain funds for support, and to receive technological assistance. The four factors above are the reasons for the inclusion of older people in the digital society. To have older people get started with computers and the Internet, one needs to receive support from family, friends and neighbours. Thinking about how people get along, older people are often praised and helped with learning how to use technology by others around them. Thus, they are more willing to try using the digital tools. In addition, such assistance will connect ordinary people with the people who set the rules and develop technology products by putting together what the public needs and how they use things. It gives those who set policies and technology directions an idea of what is good.

The purpose of the government's regulations is to guarantee that everyone can use the Internet and other technology equally. First, the government should be proactive and put forward plans for the elderly, set useability standards for digital technology, and conduct public education to enhance the digital literacy of older people. The first is that the distribution of resources can be more even; At the same time, it is also a platform for collaboration among various communities, enterprises and other parties involved. Financial support will be in the form of subsidies, tax incentives and explicit technical standards to promote the development of assistive technologies for older adults and ensure that the larger ecosystem of digital inclusion can be operated in an organised and stable manner [23].

The main purpose of economic assistance is to keep the cost of technology low and provide more choices in life for older people. For those who need assistance, the financial aid can reduce the high cost of new-technology adoption; suppliers will be motivated by government policies to develop age-friendly products and services that are convenient for the elderly to use and enhance the cooperation of markets and support systems.

Technical support is the basic part of this system; it should be practical and easy for older people to use to meet their needs. The reasons for its existence are health care and life safety; It is easy to use, and voice commands, simple Interfaces and Navigation are employed. The above attributes will enable older people to learn new technologies more easily and expand the scope of age-friendly digital services for more people.

Together, the four parts form the whole of the digital ecosystem for older people. Social support can help us know what the people need and spread information; government regulations will set up rules and allocate resources, etc., to give concrete digital tools to implement these

policies. Together, these factors can help us better understand and improve the daily life of older adults in the digital age.

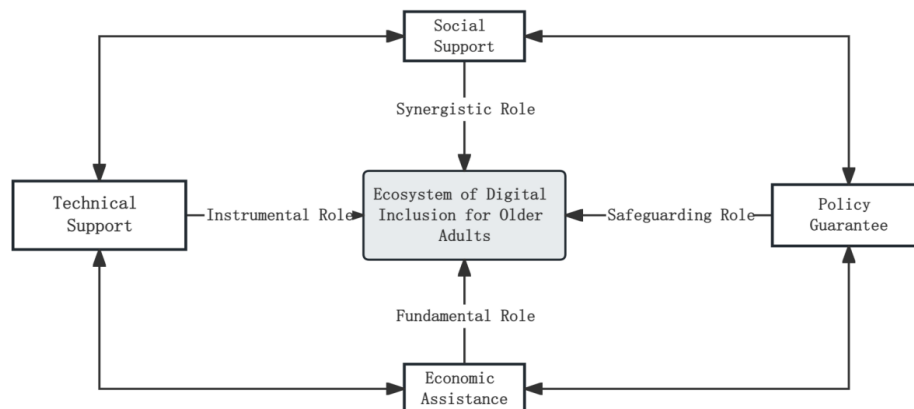


Figure 1. Ecosystem Model of Digital Inclusion for Older Adults

2.2. Research Methods

Through cross-case analysis, this paper will investigate the involvement of older people in digital services and carry out surveys and content analysis in many countries, such as Singapore, Sweden, Denmark, South Korea, etc., to learn about their own experiences and how they have built digital inclusion systems.

The two reasons for the selection are: First of all, all four countries are at the top of the Roland Berger Digital Inclusion Index and thus do a good job of including people in digital life. Second, their policies line up well with the four-part framework we're using in this study. We did a structured comparison based on those four parts to find both what they all have in common and how each country does it differently.

2.3. Data Collection and Analysis

Info was gathered using a web survey done in a methodical way, following rules about who's credible, how up-to-date it is, and whether it's relevant. The data includes four types of stuff: government policy papers, national digital programs for seniors, reports from international groups, and policy review reports with stats. The study looks at policies and real-world plans for digital inclusion for older people from the last five to ten years.

Content analysis was adopted to examine policy measures and program initiatives. Using the four-dimensional analytical framework as the coding structure, all collected materials were systematically classified and compared to ensure analytical consistency across countries. Table 1 summarizes the primary data sources used in this study.

Table 1. Data Sources and Representative Cases

Data Category	Data Type	Representative Examples
Government policy documents	National strategies, white papers, and ministerial policies	Smart Nation 2025 (Singapore); Digital New Deal 2.0 (South Korea); Digital Strategy for Denmark
National age-friendly programs	Project plans, implementation manuals, and annual reports	Digidel Center Digital Skills Program (Sweden); Danish Digital Health Strategy; Digital Inclusion Promotion Program (South Korea)
International organization reports	Index reports and comparative studies	Roland Berger, Bridging the Digital Divide
Policy evaluation and statistical reports	Statistical bulletins, policy briefs, progress reports	IMDA Digital Society Report (Singapore); Statistics on Age-friendly Digital Transformation (South Korea); Digital Device Promotion Program for Older Adults (Sweden)

3. Comparative Analysis of Digital Inclusion Practices

3.1. Social Support

To get older people online, we need help from family, friends and the neighbourhood. This kind of support is not only to teach the children how to use technology but also to boost their self-esteem and give them the confidence that they can learn. Older studies show that people who have a strong network of people around them are more likely to get help learning how to use computers and the Internet [24]. It is the first stage of the digital inclusion system. It can show the needs of users to policymakers and provide feedback for product modification by technology companies to promote cooperation among all parties.

3.1.1. Family-based Intergenerational Support

The family will be able to help the elderly learn about and use technology more easily through demonstrations and practice, and at the same time strengthen family bonds. In Denmark, a system has been developed to allow relatives to help older people with online operations of health records and welfare applications due to their inability to manage them independently [25]; additionally, some digital health platforms enable family members to view the health information of older people and simplify communication and care for everyone [26].

3.1.2. Community-based Embedded Services

Communities are the foundation of the digital world and can provide necessary services and resources for older people. Community Digital Centres and Digital Ambassadors have been established in Singapore to provide the people with offline support and one-on-one training in person, as well as other offline connectivity services [27-28]. South Korea has established community learning networks via service centers to offer free digital skills classes, free Wi-Fi, dedicated study areas and device trial areas, etc., all of which aim to boost the digital literacy of older adults [29-30].

3.1.3. Support Networks for Social Organisation

Social organisations have been working with the government to mobilise various groups of volunteers, businesses, experts and others to promote the spread of technology. In South Korea, a digital help platform and an inclusion alliance have been established; retired ICT workers, university students, volunteers, and others from various walks of life have been drawn to teach digital skills in cooperation with government agencies, enterprises and the public to improve access [31]. Denmark is another place that has done this: there are groups for older people and the visually impaired that organise classes and volunteer activities, and they also provide continuous technical support at community digital service centres to help older adults improve their use of technology [32,33].

3.2. Policy Support

The Government needs to make use of age-friendly policies and allocate funds for the purpose of advancing digital inclusion.

3.2.1. National Age-Friendly Digital Strategy

The national plan for older people will aim to simplify and reduce the complexity of digital services in all aspects. The Digital Health Strategy in Denmark has built a good environment for older people to use their health data and access online consultations with doctors and obtain prescriptions, etc., thereby receiving better health services [34]. In Singapore, under the Smart Nation programme and its latest iteration, Smart Nation 2.0, the I-OK digital help system and the Digital Service Standards (DSS) have been implemented to promote digital inclusion and make public services more convenient for all people [35].

3.2.2. Digital Education Programs

By teaching the fundamentals, digital education programmes help older adults learn how to use computers; Singapore has begun some good projects to support this, such as Seniors Go Digital, the Silver Infocomm Initiative (SII), and SkillsFuture for Digital Jobs (SFDW), which provide learning and employment opportunities for all ages [27,36]. South Korea is known for personalised learning; although there are online and offline courses, one-on-one tutoring and community training are available [30-31], there is no systematic lifelong learning system.

3.3. Economic Aid

The economy-supporting function of digital inclusion is to lower the cost and reduce the access barrier to the service; at the same time, it will help develop new, convenient products for all people and all ages.

3.3.1. Financial Subsidies

The government has raised funds to increase the number of devices and internet access points for all people. ComCare and DigitalAccess@Home in Singapore help older people with financial difficulties; South Korea has lowered communication fees and increased the coverage of public Wi-Fi [31]; Denmark is increasing investment in digital welfare innovation and infrastructure [25]; and Sweden promotes the DigidelCenter and tablet-lending program to extend the life of use for older people of all ages in the digital age [37, 38].

3.3.2. Development of the Age-Friendly Digital Market

The government and enterprises are jointly promoting the development of age-friendly digital products. South Korea has created an environment for the development of this market through laws and regulations, R&D subsidies, public data sharing, the Digital Inclusion Business Alliance, etc., to promote the creation of accessible digital services for older adults by businesses [31].

3.4. Technology Support

Technology will promote the digital inclusion of the people by enhancing convenience and real benefits; funds will be introduced for innovation, and the experience of users will be used to improve the application of this technology.

3.4.1. Function Adaptation

Functional adaptability is convenient for people of all ages in old age and meets various needs for health, safety, daily life, etc. Now that the Swedish digital health platform is in use, people can book doctors' offices and receive drugs with checks online [39]. South Korea has used both the Internet of Things and artificial intelligence to monitor the daily life of older people at home [31, 33]; at the same time, Denmark is currently applying remote healthcare services for older adults at home through telemedicine [25].

3.4.2. Age-Friendly Interaction Design

Based on the Technology Acceptance Model (TAM), the ease of use is one of the main reasons for people using new technologies. South Korea makes things easier by using big fonts, making the interface brighter, using voice navigation, and having adjustable kiosks, and they also have great support for users [31, 41]. Denmark just makes using digital doctor stuff easier by cutting out the usual steps for appointments, chatting with doctors, and managing health stuff, so older people can use it more easily [34].

4. Policy Implications for China

Based on the findings of this study, in order to assist older adults in using the Internet, the following four measures should be taken: mobilize friends and family support, formulate

supportive policies from the government, offer financial subsidies, simplify the technology, etc. Looking at what other countries have done, here are some ideas for government rules.

4.1. Strengthening the Social Support Network

More stable support should be created by having more cooperation from families, friends and community organisations. Intergenerational learning programmes could be organised to enhance the digital literacy of older people, and more digital classes and volunteer services may be organised at the community level. To promote the widespread use of digital resources, stronger cooperation should be established among the government, enterprises and non-profit organisations.

4.2. Strengthening Policy Support

Governments should develop more age-friendly digital regulations and make public services and websites convenient for all people to use. Keep having regular offline help desks so that people with disabilities can still complete the required procedures. A good system for digital education in schools, communities and other places is also needed to help older people learn how to use computers and the Internet.

4.3. Enhance Economic Motivation

Let's use money and perks to get digital stuff cheaper and push businesses that include everyone. For people wanting it, we should give out more help for buying gadgets and internet plans. For businesses making the stuff, we need tax breaks, research money, and government buying plans to get them to make digital products that older people can use. Also, we need to make sharing information and checking products better so the stuff is good quality and fits what people need.

4.4. Optimizing Technological Support

Tech should be made more user-friendly and easier to use for the elderly. Gadget screens should be bigger, with clearer sounds and simpler controls. Apps should have simple interfaces and helpful features like voice commands and ways to zoom in on the screen. Also, lots of tech support should be offered, like service stations, phone help, help from afar, and in-person guidance, to make it easier for the elderly to use new technology.

5. Conclusion

Getting older and computers changing everything has made it super important to help older people get good at using digital stuff. Looking at Singapore, Sweden, Denmark, and South Korea, this study shows that having people to help out, good government rules, money to help, and tech support all add up to the main parts of getting older people included in the digital world. Learning from these other places, China should make sure older people are taken care of with better rules, teach people better how to use tech, get companies to make tech that's easy for older folks to use, and get more different groups working together. What's next should be about making a more organized, aimed right, and long-lasting system for digital inclusion that lets older adults fully join the digital world.

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