Asian And Pacific Economic Review
ISSN: 1000-6052

INCLUSIVITY AND ACCEPTANCE OF ELDERLY PEOPLE IN MODERN DIGITALIZED WORLD: A SOCIO-TECHNOLOGICAL CHALLENGE TO ACHIEVE SDG 3 AND 10

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Abstract

The inclusion of elderly people in digital systems remains a significant yet under-addressed global challenge in an era of rapidly increasing digital transformation. Even though digital technologies are being used more and more to improve social services, healthcare, and financial inclusion, older adults are frequently left out because of technological, cultural, and structural barriers. The global socio-technological aspects of older people's digital exclusion are examined in this study, along with the significant consequences for achieving SDG 10 (Reduced Inequalities) and SDG 3 (Good Health and Well-Being).

The World Health Organisation (2024) estimates that there are currently over 1 billion people over 60 who comprise roughly 13% of the world's population, and that number is expected to rise to 2.1 billion by 2050. However, less than 35% of older adults in low- and middle-income countries (LMICs) have meaningful access to digital technologies, according to the Global Digital Inclusion Index (2024).

Using a normative and multidisciplinary approach, this study examines how the confluence of digitalisation and ageing creates new kinds of technological and social exclusion that jeopardise international development objectives. A global digital divide that disproportionately impacts older people is caused by obstacles like ageist presumptions, inadequate digital education, non-inclusive design, and cyber vulnerabilities. There are serious repercussions, including decreased ability to engage in civic life, increased loneliness and mental health issues, and decreased access to healthcare.

The study contends that the creation of an age-inclusive, rights-based agenda for digital development is essential to reaching SDGs 3 and 10. The elder-specific rights must be incorporated into the digital governance ecosystem in order to fulfil the constitutional mandate of substantive equality. Based on comparative jurisprudence from India, South Korea, the UK, and the EU, the study suggests a rights-based legal framework that includes a universal design standard for digital platforms and statutory recognition of digital accessibility as part of dignified ageing. Thus, this study majorly asserts that meaningful digital inclusion of the elderly is not only a technological necessity but also a constitutional duty essential to democratic justice in a digital republic. Realising a sustainable, inclusive, and equitable digital future, one that doesn't leave any generation behind, requires closing this gap.

Keywords: Ageing and Technology, Digital Inclusion, Elderly Population, SDG 3, SDG 10, Social Inequality.

1. INTRODUCTION

In an increasingly digitalized world, the integration of technology into everyday life, particularly in sectors such as healthcare, finance, and governance, has transformed the way individuals interact with institutions and access essential services. While this transformation promises efficiency and broader reach, it also risks deepening pre-existing social inequities. Among those most vulnerable to digital exclusion are older adults,

who face multidimensional barriers, technological, cognitive, infrastructural, and socio-cultural that hinder their meaningful participation in the digital ecosystem.

This exclusion raises critical concerns about the realisation of fundamental rights, particularly the right to health, dignity, equality, and participation, all of which are central to Sustainable Development Goal (SDG) 3 (good health and well-being) and SDG 10 (reducing inequality). The failure to include elderly populations in digital systems effectively sidelines them from healthcare access, social welfare schemes, digital financial tools, and civic engagement, thereby marginalising them in a world that increasingly prioritises digital fluency.

Globally, the elderly constitute a rapidly growing demographic yet remain disproportionately underrepresented in digital usage metrics. This phenomenon, often referred to as the "grey digital divide," reflects both structural inequalities and an absence of rights-based digital inclusion policies. Studies by the World Health Organisation and UNDESA indicate that the majority of elderly individuals in developing countries lack access to digital infrastructure, affordable internet, and elder-friendly interfaces. Further, most digital innovations are not designed with age-related physical and cognitive limitations in mind.

Consequently, older adults are increasingly excluded from essential services such as telemedicine, e-governance platforms, digital banking, and emergency alerts. The implications are significant; not only do they reinforce generational inequities, but they also impair the fulfilment of public health and welfare obligations by the state. From a normative perspective, such exclusion infringes upon the principles of substantive equality, autonomy, and non-discrimination, which underpin national constitutional frameworks and international human rights law.

Research Aim:

This research paper investigates the socio-technological challenges of integrating elderly populations into the digitalised world and argues that this inclusion is essential for the realisation of SDG 3 and SDG 10.

Methodology:

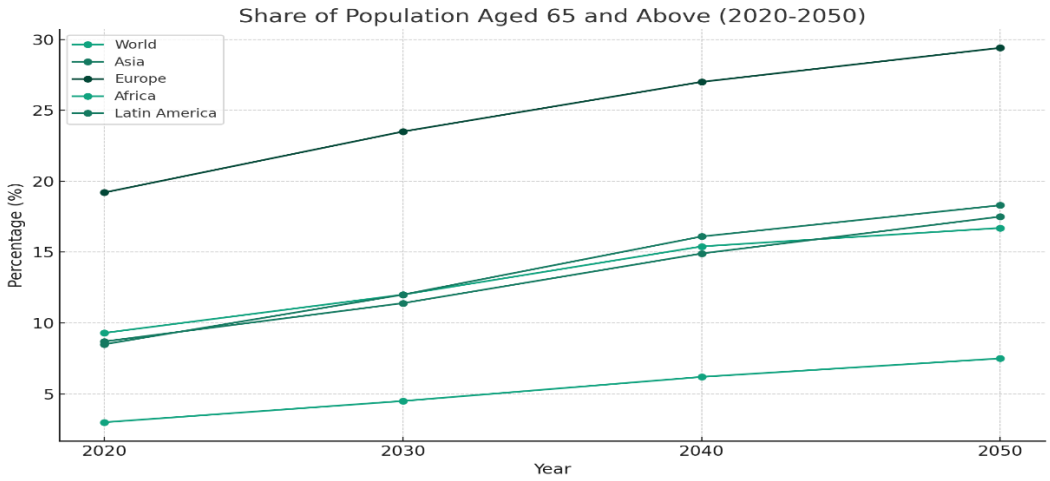
This study adopts a doctrinal legal research methodology, supported by socio-legal analysis and comparative policy evaluation. The doctrinal approach is employed to critically examine how existing legal frameworks conceptualise and address the intersection of ageing and digital inclusion.

2. Demographic Ageing and the Digital Divide: A Global Overview

The convergence of demographic ageing and accelerated digital transformation represents a critical juncture for policymakers, scholars, and development practitioners seeking to promote equitable and inclusive development. As the global population ages at an unprecedented pace, digital technologies are simultaneously reshaping public service delivery, healthcare, education, and civic participation. However, older adults, particularly those aged 65 and above, frequently encounter systemic barriers that limit their effective participation in digital ecosystems. These barriers stem from a combination of socio-economic disparities, infrastructural deficits, low digital literacy, and age-related cognitive or physical limitations.

Global Trends in Ageing Populations

The data presented below, drawn from the United Nations Department of Economic and Social Affairs (UNDESA) World Population Prospects 2022, illustrates the rising share of the population aged 65 and above across global regions from 2020 to 2050:



Source: UNDESA World Population Prospects, 2022

This data reveals a clear trajectory of demographic ageing, with Europe already exhibiting high proportions of elderly citizens, projected to reach nearly 30% by 2050.[1] Asia and Latin America show steep increases, reflecting their transition into aged societies. Africa, though currently exhibiting a lower percentage, also demonstrates a rising trend, demanding proactive policy planning.

Implications for Digital Inclusion

Despite these trends, digital inclusion of older populations remains uneven and insufficient. According to the International Telecommunication Union (ITU), internet use among individuals aged 65+ significantly lags behind other age groups, particularly in developing regions.[2] For instance, in 2022, only 37% of older adults globally were active internet users, compared to 75% among those aged 25–44.[3]

This "grey digital divide" exacerbates socio-economic vulnerabilities among the elderly, contributing to their exclusion from digital healthcare (e-health), online financial services, and digital social engagement platforms. Notably, the intersection of age with other axes of marginalisation, such as gender, rural residency, or disability, compounds this exclusion.[4]

A comparative regional analysis reveals significant divergences in readiness and policy response:

- **Europe**, while the most aged region, has comparatively advanced digital literacy programs for older citizens, supported by robust social security and digital welfare schemes. However, the sheer scale of its ageing population requires continuous innovation in assistive technologies and Geron technology.[5]
- **Asia** is undergoing rapid ageing without a commensurate expansion in elder-friendly digital infrastructure. Countries like Japan and South Korea are notable exceptions, but most South and Southeast Asian nations face significant digital readiness gaps.[6]

[1] United Nations Department of Economic and Social Affairs (UNDESA). (2022). *World population prospects 2022*. https://population.un.org/wpp/
[2] International Telecommunication Union (ITU). (2022). *Measuring digital development: Facts and figures 2022*. https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx
[3] Ibid
[4] Marston, H. R., Shore, L., & White, P. J. (2020). How does digital technology impact on the wellbeing of older adults? *A systematic review*. *Health and Social Care in the Community*, 28(6), 1827–1839. https://doi.org/10.1111/hsc.13014
[5] OECD. (2021). *Promoting digital inclusion for the elderly*. OECD Digital Economy Papers.
[6] Choudrie, J., Pheeraphuttranghkoon, S., & Davari, S. (2018). The digital divide and older adults: A review of ICT access and adoption literature. *International Journal of Information Management*, 38(3), 273–282. https://doi.org/10.1016/j.ijinfomgt.2017.12.008

- **Africa** is in a demographic transition stage, with relatively lower ageing pressures but emerging concerns regarding digital equity for older adults, especially in urbanising regions.[7]
- **Latin America** mirrors Asia in the pace of demographic ageing but faces unique challenges due to socio-political instability and digital infrastructure deficits in rural areas.[8]

The data underscore an urgent need to integrate ageing considerations into digital policy frameworks globally. Regional disparities in both ageing patterns and digital access necessitate tailored policy responses that balance immediate accessibility interventions with long-term structural reforms. Future sections of this paper will critically examine the legal, technological, and ethical dimensions of this challenge, while proposing normative frameworks for achieving inclusive digital futures

3. Digital Inclusion Metrics: Patterns of Elderly Digital Engagement

The digital divide among elderly populations remains one of the most persistent and under-addressed dimensions of the global digital transformation. While digital connectivity is often framed as a universal good, the structural barriers facing the ageing population, particularly in low- and middle-income countries, undermine the assumption of uniform technological progress. Data from the International Telecommunication Union's (ITU) *Global Digital Inclusion Index* (2022)[9] lays bare a stark stratification in elderly internet use across income categories:

Region	**Elderly Internet Use (%)**
High-Income Countries	78%
Upper-Middle Income	52%
Lower-Middle Income	29%
Low-Income Countries	12%

These figures reveal a significant correlation between a nation's income level and digital engagement among its senior citizens. In high-income countries, nearly four out of five elderly individuals are online. In contrast, in low-income countries, fewer than one in eight older adults have internet access. This disparity is not merely a function of infrastructural availability but also reflects complex intersections of affordability, digital literacy, and systemic neglect.[10]

Critically, while digital technology is being embedded into essential services in healthcare, finance, and social welfare, those aged 65 and above are frequently excluded. ITU's 2023 global survey confirms that only 38% of older adults are online globally, compared to 82% of those aged 15–64. This generational digital exclusion has far-reaching implications for equity and access to rights-based services.[11]

The severity of the gap becomes more apparent when examining national case studies:

- In **Nordic countries** like Sweden and Finland, over **85%** of seniors (65–74) are regular internet users, bolstered by state-sponsored digital literacy campaigns and pensioner-specific digital infrastructure.

[7] HelpAge International. (2023). *Ageing and the digital world: Regional policy briefing for Sub-Saharan Africa*.
[8] ECLAC. (2020). *Digital inclusion of older adults in Latin America and the Caribbean*. Economic Commission for Latin America and the Caribbean.
[9] International Telecommunication Union (ITU). (2022). *Global Digital Inclusion Index*. https://www.itu.int
[10] OECD. (2022). *Digital Economy Outlook 2022*. Organisation for Economic Co-operation and Development. https://www.oecd.org/digital
[11] International Telecommunication Union (ITU). (2023). *Measuring Digital Development: Facts and Figures 2023*. https://www.itu.int

- In contrast, **India** reports less than **15%** digital activity among those over 60, indicative of both infrastructural shortfalls and socio-educational exclusion.
- Even in relatively advanced middle-income nations like **Brazil**, only **29%** of elderly citizens accessed digital health platforms during the COVID-19 pandemic, suggesting a disjunction between e-health service availability and digital readiness among end-users.

The **OECD Digital Economy Outlook (2022)** reiterates this trend, confirming that digital usage among older adults consistently lags across OECD nations, especially among those with lower educational attainment and limited lifelong exposure to technology. It is evident that digital exclusion among the elderly is not an accidental outcome of technological advancement but a product of socio-political oversight.[12]

Disaggregating the Divide: Structural Dimensions of Digital Exclusion

Digital inequality among elderly populations is neither homogeneous nor unidimensional. It intersects with several axes of marginalisation—particularly geography, income, and gender.

- **Rural-Urban Disparities**: In China, 60% of elderly urban residents use smartphones or digital services, while this figure plummets below 25% in rural regions.[13] Similar patterns are seen in Nigeria, where low infrastructural penetration and illiteracy exacerbate digital alienation among rural elders.[14]
- **Income-Based Inequities**: The affordability barrier cannot be overstated. A Pew Research Center (2021) study in the United States revealed that only 27% of low-income seniors owned smartphones, versus 83% among their high-income counterparts. In the Global South, where pension systems are informal or underdeveloped, the financial burden of digital connectivity devices, data plans, and repair costs remains prohibitive for many elderly individuals.
- **Gendered Exclusions**: The gender gap compounds digital exclusion in the elderly demographic. The GSMA Mobile Gender Gap Report (2023) highlights that older women in South Asia are 30% less likely than men of the same age to access mobile internet.[15] In patriarchal societies like Pakistan, restrictive norms, safety concerns, and household dynamics further curtail elderly women's participation in the digital space.

These disparities are not incidental; they are symptomatic of deeper governance and policy failures that privilege technological expansion without accounting for socio-demographic realities. The prevailing techno-centric narrative of development often fails to acknowledge the burdens of digital adaptation placed on populations least equipped to bear them, chief among them, the elderly poor, rural, and female.[16]

Toward Rights-Based Digital Inclusion

If digital technology is to be a tool for social justice, rather than a new mechanism for marginalisation, digital inclusion for elderly populations must be approached through a rights-based, intersectional lens. Universal access mandates must be accompanied by age-sensitive policy frameworks, inclusive design in e-governance platforms, and publicly funded digital literacy programs. Without such interventions, the promise of digital transformation will continue to reinforce rather than reduce existing inequities.

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[12] OECD. (2022). *Digital Economy Outlook 2022*. Organisation for Economic Co-operation and Development. https://www.oecd.org/digital

[13] China Internet Network Information Center (CNNIC). (2022). *Statistical Report on Internet Development in China*. http://www.cnnic.net.cn

[14] GSMA. (2023). *The Mobile Gender Gap Report 2023*. https://www.gsma.com/r/gender-gap

[15] GSMA. (2023). *The Mobile Gender Gap Report 2023*. https://www.gsma.com/r/gender-gap

[16] United Nations Department of Economic and Social Affairs (UN DESA). (2022). *World Population Ageing 2022*. https://www.un.org/development/desa/ageing

The ageing population is not a marginal demographic. As global ageing accelerates, particularly in Asia and Latin America, excluding older adults from digital spaces threatens both their autonomy and broader societal cohesion. Bridging the digital divide for the elderly is not merely a technical challenge; it is a moral imperative tied to dignity, participation, and equality in the 21st century.

4. Barriers to Digital Inclusion of Elderly Populations

The digital exclusion of elderly populations cannot be simplistically attributed to individual incapacity or disinterest. Rather, it is the product of a confluence of technological, socio-cultural, and structural impediments, rooted in systemic neglect and age-discriminatory paradigms that pervade digital ecosystems. These barriers are neither incidental nor apolitical—they reflect and reinforce pre-existing social inequalities and institutional biases. This section critically interrogates the multifaceted nature of these barriers, drawing on empirical studies and global policy reports to underscore their embeddedness in broader patterns of digital ageism and infrastructural neglect.

a) Technological Determinants

i. Inaccessible Design and User Interfaces: Structural Ageism in Code

Contemporary digital interfaces are predominantly conceptualised for younger, tech-savvy users, with little regard for the sensory, cognitive, and motor limitations associated with ageing. The absence of user-centric design practices that accommodate older adults reflects a deeper structural ageism encoded into the very architecture of digital technologies. Cluttered interfaces, non-intuitive navigation, and small or unadjustable fonts effectively render many applications inaccessible to older users.[17]

The World Health Organisation's 2022 report on *Age-friendly Digital Environments* substantiates this claim, identifying widespread non-compliance with basic Web Content Accessibility Guidelines (WCAG) in health and welfare applications. Similarly, a 2021 AARP survey found that 72% of adults over 65 in the U.S. struggled with technology due to design flaws and a lack of instructional support, challenges not attributable to cognitive decline, but to poorly conceived digital environments.[18]

ii. Ergonomic Neglect and Interface Customisation: The Invisible Needs of Ageing Bodies

Ageing entails physiological transformations, declines in vision, hearing, dexterity, and memory that demand tailored digital ergonomics. Yet, mainstream devices rarely offer features such as voice-assisted commands, tactile cues, customizable font sizes, or simplified operational modes. This results in a technological landscape that is physically and cognitively misaligned with the realities of older users.

The ITU's *Digital Accessibility Toolkit*, 2021[19] emphasizes this gap, noting that public digital kiosks and smartphones frequently lack age-sensitive functionalities. In India, the Ministry of Electronics and Information Technology, MeitY, 2022[20] observed that essential services ranging from digital banking to e-governance are rendered inaccessible to elderly citizens due to the absence of basic assistive technologies, further reinforcing digital marginalisation.

b) Socio-Cultural Determinants

i. Ageism in Digital Design and Discourse: A Bias by Omission

Ageist ideologies framing older adults as technophobic, inflexible, or technologically incapable pervade the discourses and practices of digital innovation. These assumptions not only inform product development and

[17] World Health Organization. (2022). *Age-Friendly Digital Environments: A Global Survey*. Geneva: WHO.
[18] AARP. (2021). *2021 Tech and the 50+ Survey*. https://www.aarp.org/research/topics/life/info-2021/tech-trends-older-americans.html
[19] International Telecommunication Union (ITU). (2021). *Digital accessibility toolkit: A guide to implementing inclusive digital practices*. Retrieved from https://www.itu.int
[20] Ministry of Electronics and Information Technology (MeitY). (2022). *Audit report on accessibility of government digital platforms for senior citizens*. Government of India.

marketing strategies but also result in the exclusion of elderly voices from user-testing processes and policy consultations. The outcome is a self-reinforcing cycle of exclusion where the absence of older users in digital spaces is naturalised and perpetuated by design.

A study from the Oxford Internet Institute[21] reveals that elderly individuals are systematically excluded from technology marketing campaigns and interface design processes. Likewise, a UNESCO report, 2020[22] criticizes the tokenistic inclusion of ageing populations in digital policymaking, arguing that such gestures fail to translate into substantive, rights-based engagement or representational equity.

ii. Digital Alienation and Epistemic Mistrust

Beyond access and usability, elderly individuals often experience a profound sense of alienation from digital cultures, intensified by rapid technological change and prior exclusion from digital literacy initiatives. This generational digital disjuncture is further compounded by legitimate concerns about privacy, surveillance, and fraud concerns that are frequently dismissed or pathologised as irrational.

A 2022 Eurostat survey revealed that over 40% of EU citizens aged 65+ abstained from using digital platforms primarily due to fears related to cybersecurity and data privacy.[23] Similarly, a HelpAge International study in 2021[24] found that in Southeast Asia, many older adults continue to rely on interpersonal networks or analogue mechanisms to access essential services, citing mistrust in automated systems for accessing healthcare, pensions, or public benefits.

c) Structural Determinants

i. Policy Vacuums and Infrastructure Deficits in the Global South

Digital exclusion is most pronounced where it intersects with structural inequalities, particularly in Low- and Middle-Income Countries (LMICs), where national broadband strategies and digital literacy campaigns largely overlook the specific needs of older populations. Age is rarely treated as a category of concern in national digital inclusion frameworks, resulting in policy invisibility and programmatic neglect.[25]

According to the ITU's *Global Connectivity Report*, 2022, fewer than 20% of global broadband strategies explicitly address the digital inclusion of older persons.[26] In countries such as Nigeria and Bangladesh, digital investment continues to prioritise youth-centred education and employment initiatives, leaving older adults underserved in both policy and practice.

ii. Economic Marginalisation and Digital Affordability Gaps

Economic precarity among elderly populations, especially those reliant on pensions or informal incomes, constitutes a formidable barrier to digital inclusion. The cost of smartphones, computers, and broadband access remains prohibitive, exacerbating exclusion in both urban and rural contexts.

The GSMA Mobile Connectivity Index, 2023 reports that in sub-Saharan Africa, the cost of a basic smartphone constitutes over 60% of a retired person's monthly income.[27] Similarly, a 2021 CEPAL report noted that over half of Latin Americans aged 60+ in rural areas lack home internet access due to unaffordable

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[21] Oxford Internet Institute. (2021). *Invisibility by design: The marginalization of older adults in tech advertising*. University of Oxford. https://www.oii.ox.ac.uk/publications/

[22]

[23] Eurostat. (2022). *Digital economy and society statistics—Households and individuals*. European Commission. https://ec.europa.eu/eurostat/statistics-explained/

[24] HelpAge India. (2022). *Digital exclusion and ageing in India: Barriers, perceptions and policy gaps*. Retrieved from https://www.helpageindia.org

[25] Roberts, T., & Marchais, G. (2018). Assessing the role of digital inequality in development: A critical review. *Development Policy Review*, *36*(3), 345–362. https://doi.org/10.1111/dpr.12238

[26] International Telecommunication Union. (2022). *Global connectivity report 2022*. https://www.itu.int/en/ITU-D/Technology/Pages/Global-Connectivity-Report.aspx

[27] GSMA. (2023). *Mobile Connectivity Index 2023*. GSM Association. https://www.gsma.com/mobilefordevelopment/resources/mobile-connectivity-index-2023/

data subscriptions and weak infrastructure.[28] These economic barriers are not incidental; they are symptomatic of broader intergenerational inequalities embedded in digital capitalism.

The barriers to digital inclusion for elderly populations are not isolated technical glitches or circumstantial limitations; they are symptomatic of deeper systemic failures to account for ageing in the digital age. Technological design exclusions, cultural ageism, and structural policy neglect coalesce to produce a matrix of digital marginality. If the goal of digital transformation is to enhance equity and participation, then current approaches must be fundamentally restructured. This requires a paradigm shift from seeing older adults as peripheral users to recognising them as integral stakeholders in the digital future. Without this shift, the project of digital inclusion will remain incomplete and ethically compromised.

5. Implications for Sustainable Development Goals

The digital exclusion of elderly populations has far-reaching consequences for the achievement of the SDGs, particularly SDG 3 (Good Health and Well-Being) and SDG 10 (Reduced Inequalities). As governments and institutions digitise health services, civic participation mechanisms, and social protection systems, the elderly, often among the most vulnerable, are left behind, compounding age-related disadvantages and undermining inclusive development agendas.

a) SDG 3 – Good Health and Well-Being

i. Exclusion from e-health, telemedicine, and mental health support

Digital technologies are increasingly central to modern healthcare delivery. Telemedicine platforms, digital health records, wearable monitoring devices, and mental health apps are transforming how services are accessed and delivered. However, elderly populations are frequently excluded from these systems due to a lack of digital literacy, infrastructure, and age-friendly interfaces.

According to a 2021 WHO report on Digital Health, fewer than 20% of individuals aged 65+ in low- and middle-income countries (LMICs) have access to telemedicine services.[29] In India, the government's eSanjeevani platform saw over 130 million consultations by mid-2023, but a disproportionate number were accessed by younger, urban populations. Elderly citizens, particularly in rural areas, often lacked smartphones, internet connectivity, or awareness to use the service.[30]

Similarly, in Europe, the OECD (2022[31] reported that older adults were significantly less likely to use online mental health services. This digital gap has been associated with heightened risks of untreated depression, anxiety, and loneliness among the elderly—conditions that were severely exacerbated during the COVID-19 pandemic.

ii. Increased susceptibility to isolation, anxiety, and non-communicable diseases

Social isolation among older adults, already a public health concern, has been intensified by digital exclusion. Elderly individuals who are not digitally connected are less likely to participate in online social interactions, access community resources, or engage with health-promoting platforms.

The United Nations Decade of Healthy Ageing (2021–2030)[32] emphasizes that lack of access to digital technology prevents elderly individuals from engaging in preventive care and peer support networks. A study

[28] CEPAL. (2021). *Digital inclusion of older persons in Latin America and the Caribbean: Bridging the digital divide*. United Nations Economic Commission for Latin America and the Caribbean. https://www.cepal.org/

[29] World Health Organization. (2021). *Global strategy on digital health 2020–2025*. https://www.who.int/publications/i/item/9789240020924

[30] Ministry of Health and Family Welfare. (2023). *eSanjeevani: Milestones and Impact*. Government of India. https://esanjeevani.in

[31] OECD. (2022). *Strengthening mental health services in the digital age*. Organisation for Economic Co-operation and Development. https://www.oecd.org/health

[32] United Nations. (2021). *UN Decade of Healthy Ageing (2021–2030)*. https://www.who.int/initiatives/decade-of-healthy-ageing

by HelpAge International, 2022[33] in Kenya and Cambodia found that older persons without digital access were 60% more likely to suffer from untreated non-communicable diseases due to missed screening and follow-up appointments.

In Japan, a country with high ageing rates but significant digital outreach government programs that provide smartphone training to seniors have been shown to reduce feelings of isolation and improve self-reported health outcomes, illustrating the transformative potential of inclusive digital health strategies.[34]

b) SDG 10 – Reduced Inequalities

i. **Digital marginalisation as a form of structural inequality**

Digital exclusion reflects and reinforces systemic inequalities based on age, income, gender, and geography. For elderly populations, especially those in rural or underserved communities, the inability to participate in digital spaces limits access to essential services, entitlements, and empowerment opportunities.

The ITU Global Connectivity Report, 2022[35] notes that digital marginalisation of older adults constitutes a new form of structural inequality, comparable to earlier gaps in literacy and employment. In Brazil, only 35% of elderly individuals in low-income households have access to the internet, compared to 90% in high-income households.[36] This exclusion is directly correlated with lower uptake of digital banking, social assistance, and pension schemes.

ii. **Impediments to civic participation, access to welfare, and intergenerational solidarity**

Elderly exclusion from digital platforms also limits their participation in civic life. E-governance platforms, online voting initiatives, and participatory budgeting tools often overlook elderly engagement, leading to diminished political agency.

In South Africa, for instance, digital portals for welfare registration require online access and literacy, excluding thousands of elderly citizens who rely on in-person interactions. The South African Human Rights Commission (2022)[37] raised concerns about these systems exacerbating barriers for older adults, particularly women in rural areas.

Digital exclusion also weakens intergenerational solidarity. In families where younger members are digitally active, elderly relatives may experience communication breakdowns or feel disconnected from family life. According to a 2022 European Commission report, intergenerational digital engagement initiatives such as co-learning programs have been effective in reducing generational divides and fostering mutual support, but are still rare in LMIC contexts.[38]

The failure to integrate elderly populations into the digital landscape directly undermines the core objectives of SDG 3 and SDG 10. Addressing this gap requires not only expanding access to digital infrastructure and tools but also rethinking policy frameworks, service delivery models, and technology design through an age-

[33] HelpAge International. (2022). *Older people and digital exclusion: Findings from Kenya and Cambodia*. https://www.helpage.org/newsroom/latest-news

[34] Ministry of Internal Affairs and Communications. (2023). *Promoting digital inclusion for older persons in Japan: Policy outcomes and recommendations*. Government of Japan. https://www.soumu.go.jp/english/

[35] International Telecommunication Union (ITU). (2022). *Global Connectivity Report 2022: The State of Broadband Connectivity Worldwide*. https://www.itu.int/en/ITU-D/Statistics/Pages/publications/gcr-2022.aspx

[36] Instituto Brasileiro de Geografia e Estatística. (2021). *Access to internet and television and ownership of mobile telephone for personal use 2021*. https://www.ibge.gov.br/en/statistics/multidomain/information-society/27966-pnadc-acesso-a-internet-e-a-televisao-e-posse-de-telefone-movel-celular-para-uso-pessoal.html

[37] South African Human Rights Commission. (2022). *Report on digital exclusion and access to welfare in rural communities*. https://www.sahrc.org.za/index.php/sahrc-media/news-2/item/3386-digital-access-and-human-rights

[38] European Commission. (2022). *Intergenerational learning and digital inclusion: Fostering social cohesion in the digital age*. Publications Office of the European Union. https://data.europa.eu/doi/10.2766/784887

inclusive, rights-based lens. Without such interventions, digitalisation will continue to exacerbate health disparities, entrench social exclusion, and delay progress toward a just and equitable global society.

6. Comparative Legal and Policy Analysis: Towards an Age-Inclusive Digital Governance Regime

The global push toward digital transformation, while hailed as a driver of progress, risks entrenching new forms of exclusion if it fails to address structural inequalities embedded in age, class, and technological access. In this context, the digital marginalisation of elderly populations constitutes not merely a policy oversight but a substantive failure of constitutional and human rights commitments. A comparative legal and policy analysis of India, South Korea, the United Kingdom, and the European Union reveals divergent trajectories in reconciling age with digital inclusion. These divergences underscore the urgent need for normative convergence and operational coherence in designing age-inclusive digital governance regimes.

A Comparison of Legal and Policy Initiatives for Elderly Digital Inclusion

Country/Region	Legal Provisions	Policy Initiatives	Outcomes
India	Article 14 (Right to Equality), Article 21 (Right to Life with Dignity), Rights of Persons with Disabilities Act, 2016	Digital India campaign, Rashtriya Vayoshri Yojana, Elder Line, Senior Citizen Portal	Limited outreach due to infrastructural and digital literacy gaps; urban-centric impact
South Korea	Framework Act on Intelligent Informatisation (2009), Age Discrimination Prohibition Act (2008)	'Smart Senior' digital training programs, community ICT hubs, Tech-savvy Elder Clubs	High digital literacy among elders, sustained public-private cooperation, and age-sensitive ICT design
United Kingdom	Equality Act 2010, Human Rights Act 1998	UK Digital Strategy (2022), Centre for Ageing Better, 'Digital Lifeline' project	Recognised best practices in accessibility audits, user co-design, and inclusive procurement
European Union	European Accessibility Act (2019), EU Charter of Fundamental Rights	Digital Compass 2030, Ageing Europe Report (Eurostat), Horizon 2020 research funds	Strong normative emphasis on design-for-all, but enforcement inconsistencies across member states

India: Constitutional Rhetoric vs. Operational Deficits

India's constitutional framework, particularly Articles 14 and 21[39], provide a fertile normative ground for articulating a right to digital dignity for the elderly. The Rights of Persons with Disabilities Act, 2016, although not elder-specific, reinforces this trajectory by mandating accessibility across digital platforms. Yet, in the absence of age-differentiated statutory recognition, the elderly continue to be treated as an invisible demographic in digital governance. Programs such as the *Digital India* campaign and *Rashtriya Vayoshri Yojana*[40] remain programmatic rather than rights-based, plagued by inadequate targeting, underfunding, and a myopic urban bias. These implementation asymmetries expose a critical gap between constitutional ideals and distributive justice, especially in the context of rural-urban and intergenerational digital divides.[41]

[39] Constitution of India. (1950). *Article 14 and Article 21*. Available at https://legislative.gov.in (Last visited on 20th June, 2025)
[40] Ministry of Social Justice and Empowerment. (2021). *Rashtriya Vayoshri Yojana Guidelines*. https://socialjustice.gov.in
[41] Mander, H. (2022). *Inequality and the Exclusion of the Elderly in Digital India*. Indian Journal of Human Development, 16(2), 145–160.

Argumentatively, India's failure lies not in a lack of normative frameworks but in a profound deficit of institutional translation. The lack of accountability structures such as a digital inclusion ombudsperson or elder-specific ICT watchdog renders constitutional guarantees hollow. In the digital domain, where state services are increasingly virtualized, such a lacuna jeopardizes both procedural due process and substantive dignity for elderly citizens.[42]

South Korea: Synergistic Techno-legal Welfare Integration

South Korea represents a paradigmatic case of techno-legal convergence in promoting digital inclusion among the elderly. Anchored in the *Framework Act on Intelligent Informatization* and the *Act on Prohibition of Age Discrimination in Employment and Aged Employment Promotion 1991*, the state's digital policies adopt a rights-informed welfare model. Programs like *Smart Senior* and community ICT hubs are not merely supplementary services but are institutionalised as infrastructural guarantees of digital citizenship. The incorporation of age-sensitive design norms, co-funded public-private elder tech clubs, and an explicit anti-ageism legal architecture exemplifies policy coherence and foresight.[43]

Critically, South Korea challenges the conventional dichotomy between welfare and rights, illustrating how age-inclusive digital transformation is not a derivative obligation but a central tenet of democratic governance. The model defies minimalist interpretations of state duties, advocating instead for capacitarian approaches that treat digital literacy as a public entitlement akin to health or education.[44]

United Kingdom: Co-Design as a Normative Innovation

The United Kingdom's approach is distinguished by its strong equality jurisprudence and participatory policy model. The *Equality Act 2010* and the *Human Rights Act 1998* offer a robust legal basis to prohibit digital exclusion as a form of indirect discrimination. Projects such as *Digital Lifeline*, initiated in response to the COVID-19 crisis, underscore the government's recognition of digital deprivation as a form of social vulnerability.[45]

Importantly, the UK's emphasis on co-creation where elderly users actively participate in the design of digital tools and services transcends mere accessibility compliance. This participatory ethos introduces a democratic dimension to digital governance by foregrounding the principles of autonomy, dignity, and voice. Normatively, this reconfigures elderly persons not as passive recipients of technological aid but as co-producers of public digital goods.[46]

However, the UK's reliance on time-bound funding cycles and its fragmented delivery across devolved administrations pose sustainability concerns. The challenge is to institutionalise these innovations within a long-term legislative and fiscal framework.

European Union: Normative Ambition vs. Enforcement Deficit

[42] Sharma, R. (2022). *Bridging the Digital Divide: Governance Challenges and the Elderly in India*. Journal of Law and Technology, 9(1), 77–95.

[43] Choi, H. J. (2023). *Digital Democracy and the Aging Society: Lessons from South Korea*. Journal of Asian Public Policy, 16(1), 65–82. https://doi.org/10.1080/17516234.2022.2102456

[44] Lee, J., & Kim, H. (2022). *Smart Seniors and the Future of Digital Aging: A Korean Case Study*. Journal of Gerontological Social Work, 65(2), 135–152. https://doi.org/10.1080/01634372.2021.1992631

[45] Department for Digital, Culture, Media and Sport. (2021). *Digital Lifeline: Supporting digitally excluded people with learning disabilities*. UK Government. ↩

[46] Greenhalgh, T., Wherton, J., Papoutsi, C., Lynch, J., & Hughes, G. (2019). Beyond Adoption: A New Framework for Theorizing and Evaluating Nonadoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies. *Journal of Medical Internet Research*, *21*(11), e13170. https://doi.org/10.2196/13170 ↩

The European Union's legal architecture provides a model of aspirational rights through instruments like the *European Accessibility Act (2019)* and the *EU Charter of Fundamental Rights*.[47] Initiatives under *Digital Compass 2030*[48] and *Horizon 2020*[49] exemplify strategic investments in research and innovation geared toward inclusive digital futures.

Yet, the EU's competence constraints and the subsidiarity principle often dilute enforcement at the member state level. Despite its normative leadership, the uneven implementation of accessibility standards across jurisdictions has created a patchwork of digital inclusion, leading to what may be termed a "geolegal fragmentation of digital justice."[50]

From an analytical lens, the EU case reflects the perils of over-reliance on soft law and funding mechanisms in the absence of binding, justiciable entitlements. Institutionally, the EU lacks a transnational mechanism to monitor and redress digital rights violations among the elderly, thus compromising the transformative potential of its otherwise progressive digital agenda.[51]

A comparative jurisprudential synthesis suggests that while constitutional and legislative architectures increasingly acknowledge digital access as a matter of rights, the elderly remain structurally excluded due to design inattention, policy fragmentation, and institutional neglect. The Indian model suffers from implementation paralysis; the South Korean model thrives on coordinated techno-welfare integration; the UK model innovates with participatory inclusivity, and the EU model, while normatively rich, is procedurally weak.

The central argument emerging from this analysis is that digital inclusion cannot be treated as a technocratic policy intervention it must be entrenched as a constitutional and developmental priority. The absence of age-specific digital rights frameworks, independent monitoring authorities, and grievance redressal systems marks a common shortfall. A transformative digital governance regime demands a multiscalar strategy embedding age-sensitive digital entitlements within constitutional jurisprudence, statutory law, administrative norms, and grassroots participation.

7. Towards an Age-Inclusive Digital Governance Framework

a) Constitutional Foundations for Digital Justice and Elder Inclusion

The foundational bedrock of an age-inclusive digital governance framework must rest on constitutional guarantees of equality, dignity, and justice. In jurisdictions such as India, the principles enshrined in *Article 14* (right to equality), *Article 21* (right to life and dignity), and the Directive Principles of State Policy provide a normative basis for the expansion of digital entitlements to older persons as an extension of social citizenship.[52] The concept of *substantive equality* which goes beyond formal equal treatment to accommodate historical disadvantages demands that elder citizens be specifically recognized within digital development paradigms.[53]

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[47] European Union. (2012). *Charter of Fundamental Rights of the European Union*. Official Journal of the European Union, 2012/C 326/02; European Commission. (2019). *Directive (EU) 2019/882 on the accessibility requirements for products and services (European Accessibility Act)*.

[48] European Commission. (2021). *2030 Digital Compass: The European way for the Digital Decade*. https://ec.europa.eu/

[49] European Commission. (2014). *Horizon 2020 – The EU Framework Programme for Research and Innovation*. https://ec.europa.eu/programmes/horizon2020/

[50] De Gregorio, G. (2021). The rise of digital constitutionalism in the European Union. *International Journal of Constitutional Law*, *19*(1), 41–70. https://doi.org/10.1093/icon/moab001

[51] Wójcik, A. (2022). Digital rights and EU governance: Emerging gaps in accessibility. *Journal of European Public Policy*, *29*(5), 731–749. https://doi.org/10.1080/13501763.2021.1924444

[52] Government of India. (1950). *Constitution of India*. Available at https://legislative.gov.in/constitution-of-india (Lat visited on 1st July, 2025)

[53] Baxi, U. (2008). *The Future of Human Rights* (3rd ed.). Oxford University Press.

Moreover, as digital participation increasingly determines access to public goods and services, the *right to digital justice* must be recognized as a constitutional imperative. This entails that states not only refrain from discriminatory exclusions but actively facilitate inclusion through enabling structures, addressing both material and cognitive barriers faced by the elderly.[54] A constitutional reading of digital entitlements would thus position access to digital technologies, platforms, and services as integral to human dignity and democratic participation.

b) Normative Proposals: Reimagining Rights and Design Standards

To operationalize this vision, digital accessibility must be codified as a justiciable right. This implies not only recognizing the elderly as a protected group within digital rights frameworks but also instituting positive obligations on both state and private actors to ensure meaningful digital access.[55]

In this regard, legal regimes must adopt a "universal design" approach, requiring all digital products and services whether in e-governance, banking, healthcare, or mobility to be inherently accessible to users across age and ability spectra. Similar to the *Americans with Disabilities Act (ADA)*[56] or the *European Accessibility Act*,[57] future legislation should establish statutory design standards for elder usability, including interface simplicity, multilingual options, tactile inputs, and auditory/visual aids.

Further, these norms must be backed by enforceable penalties and oversight mechanisms, ensuring non-compliance is subject to judicial or administrative review. Such legal codification would elevate elder digital inclusion from a matter of policy discretion to a matter of legal entitlement.

c) Institutional and Policy Mechanisms: Building Capacity and Accountability

A robust age-inclusive framework cannot function without dedicated institutions. The establishment of Digital Inclusion Ombudspersons or Commissions for Inclusive Technology at national and sub-national levels would provide targeted grievance redressal and policy oversight. These bodies should be empowered to:

- Monitor compliance with digital accessibility norms;
- Receive and adjudicate complaints from elderly users;
- Advise governments and private stakeholders on inclusive design and implementation strategies;
- Produce annual inclusion audits and impact reports.

In tandem, mainstreaming elder participation in digital policymaking is essential to ensure legitimacy and responsiveness. This can be achieved through participatory councils, stakeholder consultations, and inclusion of elder representatives in regulatory agencies and digital taskforces. Such deliberative structures not only democratize digital governance but also anchor policies in the lived realities of older citizens.[58]

The transition towards an age-inclusive digital governance framework requires an integrated legal-political strategy: constitutional recognition, normative reform, and institutional innovation.[59] It also demands a paradigmatic shift in how digital citizenship is understood moving from a techno-centric approach to a rights-

[54] United Nations. (2021). *Ageing and digital technologies: Creating a digital world for all ages*. United Nations Department of Economic and Social Affairs. https://www.un.org/development/desa

[55] Mantelero, A. (2018). AI and Big Data: A blueprint for a human rights, social, and ethical impact assessment. *Computer Law & Security Review*, *34*(4), 754–772. https://doi.org/10.1016/j.clsr.2018.05.017

[56] United States. (1990). *Americans with Disabilities Act of 1990*, 42 U.S.C. § 12101 et seq.;
European Commission. (2019).

[57] Directive (EU) 2019/882 on the accessibility requirements for products and services (European Accessibility Act)

[58] United Nations Department of Economic and Social Affairs (UN DESA). (2021). *Ageing and digital technologies: Creating a digital world for all ages*. https://www.un.org/development/desa

[59] Van Dijk, J. A. G. M. (2020). *The Digital Divide*. Polity Press.

based and elder-sensitive architecture. In doing so, democracies can fulfil their commitment to inclusion, equity, and justice in the digital age, ensuring that no citizen is left behind in the march toward digital transformation.

8. Recommendations: Advancing an Age-Inclusive Digital Ecosystem

The realization of a truly age-inclusive digital ecosystem demands more than piecemeal reforms or well-meaning policy gestures; it requires a normative reorientation that treats elder digital inclusion as a matter of constitutional justice, not administrative convenience. Short-term interventions must begin by dismantling the foundational barrier of digital illiteracy among older persons, which often serves as both a cause and a consequence of broader social marginalization. Community-based digital literacy programs, if designed with cultural sensitivity and local adaptability, can serve not only as educational tools but also as mechanisms of social empowerment and rights realization.[60] These initiatives grounded in peer-led instruction, decentralized learning spaces, and mobile outreach should be explicitly framed as fulfilling the constitutional rights to education, information, and equal access to public goods, rather than being positioned as temporary welfare handouts. Simultaneously, states must impose immediate regulatory obligations on all public sector digital interfaces through mandatory accessibility audits based on global standards such as WCAG 2.1. Without robust audit regimes, backed by penalties and performance-based incentives, the promise of digital inclusion remains structurally hollow.[61] Institutionalizing such audits through legally binding mechanisms and entrusting oversight to independent regulatory bodies is essential for ensuring both vertical (state-citizen) and horizontal (public-private) accountability.

However, short-term measures are insufficient unless embedded within long-term legal and institutional restructuring. Existing elder law regimes, such as India's Maintenance and Welfare of Parents and Senior Citizens Act (2007), must be amended to explicitly recognize digital access as a dimension of welfare and dignity, while digital governance laws must incorporate age as a protected category within their anti-discrimination provisions.[62] The creation of a *Digital Inclusion Charter for Older Persons*, modeled after global best practices, can articulate the entitlements of senior citizens in the digital domain and serve as a normative anchor for future reforms. Moreover, merely expanding access without institutional metrics for monitoring outcomes risks reproducing inequality under the guise of inclusion. To avoid this, governments must integrate digital inclusion indicators into Sustainable Development Goal (SDG) reporting frameworks especially under SDG 3, 10, and 16 and develop granular, disaggregated metrics that assess not just access but usability, satisfaction, and participation by older persons[5]. Such integration would elevate elder digital inclusion from a marginal policy concern to a core developmental priority, while also enabling cross-national benchmarking and compliance tracking through indices like the UN E-Government Development Index.

Ultimately, an age-inclusive digital transformation must be undergirded by enforceable legal rights, independent oversight institutions, and inclusive governance structures. Without a paradigm shift from a techno-centric to a justice-based approach digital development risks deepening structural exclusions and further disenfranchising those already on the margins. As such, these recommendations do not merely propose improvements; they demand a recalibration of the state's constitutional and democratic obligations in the digital age.

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[60] United Nations Department of Economic and Social Affairs (UN DESA). (2021). *Ageing and digital technologies: Creating a digital world for all ages*. https://www.un.org/development/desa

[61] World Wide Web Consortium (W3C). (2018). *Web Content Accessibility Guidelines (WCAG) 2.1*. https://www.w3.org/TR/WCAG21/

[62] Fredman, S. (2011). *Discrimination Law* (2nd ed.). Oxford University Press.