

Artificial Intelligence and Older Persons: Opportunities for Empowerment and Risks of Digital Exclusion in Light of Rights-Based Safeguards

An analytical study with special reference to the United Arab Emirates

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ORCID: 0009-0005-5561-5023 | November 2026

Abstract

This study examines the relationship between the development of artificial intelligence (AI) technologies and the rights of older persons. It analyses the opportunities that smart applications offer in health care, independent living, social connection and economic security, set against the risks arising from digital exclusion, algorithmic age discrimination, privacy violations and fraud. The study adopts a descriptive-analytical approach based on international reports, systematic reviews, meta-analyses and relevant national surveys, and discusses the UAE legislative context. The review shows that the age gap in use remains wide, that the evidence of benefits is promising but limited, and that fraud risks are documented by rising figures. The study proposes a preliminary framework for safe digital empowerment that links graduated learning, inclusive design, data protection, human review and evaluation. It concludes that the rights-based value of AI is not measured by the mere availability of a service, but by its capacity to expand the real

choices of older persons while respecting their will and dignity. The study does not present field results, nor does it claim to have tested the proposed model.

Keywords

Artificial intelligence; older persons; senior citizens; autonomy; digital empowerment; ageism; privacy; United Arab Emirates.

1. Introduction and Research Problem

The rapid expansion of artificial intelligence coincides with a demographic shift in which questions of ageing and quality of life are growing in importance. According to the World Health Organization, the number of people aged 60 and over will rise from one billion in 2020 to 1.4 billion by 2030 — about one in every six people in the world — and to 2.1 billion by 2050, while the number of people aged 80 and over will roughly triple over the same period (WHO, 2024). The International Telecommunication Union's 2026 report describes ageing and digital transformation as parallel trends that are rarely studied together (ITU, 2026).

Smart technologies are no longer confined to laboratories or specialised institutions; they have entered health, banking, household and government services, and can now generate text, recognise speech, analyse patterns and offer personalised recommendations. These functions create new opportunities for people whose mobility, hearing or sight may limit their ability to perform certain tasks, but they also raise questions about privacy, equality and the limits of reliance on automated decisions.

The available data show that the benefits of this wave are not shared equally across ages. The ITU report cites a US survey in which AI use peaks (31%) in the 30–44 age group and falls to 8% among those over 60 (ITU, 2026). In a Pew Research Center survey conducted in February 2026, only 23% of Americans aged 65 and over said they use chatbots, compared with 66% of those aged 18–29, and only 7% use them daily — although the share of the oldest group who have used ChatGPT rose from 4% in 2023 to 19% in 2026 (Pew Research Center, 2026). The gap is narrowing, but it remains wide.

Older persons cannot be treated as a homogeneous group. Differences in education, digital experience, economic resources, health status and family support may explain use better than age alone. One person of advanced age may use a voice assistant or a translation tool independently, while another needs basic help to operate a phone. Generalisations that equate ageing with technical incapacity may therefore reproduce the very discrimination they seek to address.

The central research problem is to identify the conditions under which AI becomes a tool that strengthens the autonomy and participation of older persons, rather than a new source of exclusion, exploitation or substitution of their will. The study asks: How can smart applications be used to improve quality of life? What safeguards ensure privacy, consent, fairness and the ability to object? And how can this be applied in the UAE context?

The study contributes a rights-based reading that brings together the literature on ageing and on AI governance, distinguishes between what the evidence establishes and what it merely promises, and links this to UAE legislation without attributing to it provisions it does not contain.

2. Methodology and Limits of the Evidence

The study adopts a descriptive-analytical method. It reviews digital-empowerment frameworks, international institutional reports and the literature on ageing and smart technologies, then compares benefits and risks from a rights perspective. The analysis takes care to separate verifiable facts from proposals and future recommendations.

Sources were selected in four categories ranked by strength of evidence: (a) peer-reviewed systematic reviews, meta-analyses and randomised trials; (b) reports of international organisations such as the WHO, the ITU and the OECD; (c) national surveys with a published methodology; and (d) UAE legislation and policies. Priority was given to sources published between 2021 and 2026, while older sources of foundational value were retained. Where a figure was taken from a secondary source because the original could not be consulted, this is stated in the text.

There are three main limits to the conclusions. First, American, European or Asian surveys do not automatically represent the situation of senior citizens in the UAE, given differences in population structure, services, language and culture. Second, generative AI, chatbots, conventional

algorithmic systems and smart devices must be distinguished, as studies do not necessarily measure the same phenomenon. For example, AI use among people over 50 reached 30% in 2025 under a broad definition, but only 19% when limited to platforms such as ChatGPT (Kakulla, 2025b). Third, technical capability or user satisfaction does not establish a causal effect on health, autonomy or loneliness. The study therefore contains no original survey, trial or UAE data, and the proposed model still requires future testing.

It follows that the evidence is not presented as being of equal strength. A randomised trial compares a group exposed to a specific intervention with one that was not; an observational study tracks use and outcomes without full control of confounding factors; and a cross-sectional survey describes participants' views at a given moment without proving that the technology caused an improvement. A distinction is also drawn between statistical significance and practical importance: a statistically significant reduction in loneliness scores does not by itself show how large the improvement is, whether it lasts after the trial, or whether it justifies the cost. The possibility of publication bias is taken into account, since studies with positive results are more likely to be published. Finally, different age thresholds are not treated as equivalent: the 50-plus group is not the same as the 60-plus or 65-plus group, and none of them corresponds exactly to the concept of "senior citizens" in UAE legislation; the age group is therefore stated with every figure. Wherever possible, any percentage is reported with its country, year, age group and question wording, and any effect with the type of tool, participant characteristics, setting and measured outcome. The term "artificial intelligence" covers very different interventions, and evidence that a tool reduces loneliness does not mean it improves medication adherence or financial independence.

3. Digital Empowerment and Balanced Trust

Owning a smart device is not enough to achieve digital empowerment. There is a difference between access to a service, the ability to operate it, and the ability to benefit from it knowingly and safely. The literature links ageism specifically to a widening gap in skills and use, not merely in access (Chu et al., 2022). A user may receive an instant answer from a smart assistant without having the skills to check whether it is correct — a matter of great importance when the answer concerns the person's health, money or legal rights.

Surveys indicate that the main barrier is not age itself but trust and design. In an AARP report based on a sample of 3,838 adults, three in five people over 50 said technology is not designed with their age in mind, and about half of those hesitant to adopt technology placed trust, privacy and data security at the top of their concerns, especially when trying AI tools (Kakulla, 2025b). In an earlier survey, 68% expressed concern that AI may reduce human interaction (Kakulla, 2025a). The Pew Research Center found that Americans aged 65 and over are the most likely to say they are unsure about AI's impact on their lives and on society (Pew Research Center, 2026). This hesitation may be rational caution to be built upon rather than broken down; low usage figures do not justify concluding that most older persons are incapable of learning or unwilling to learn, since non-use may be a conscious decision based on lack of need, or the result of a real barrier in training or access.

AI literacy requires a practical understanding of the limits of these tools: systems may produce inaccurate answers, their data may reflect biases, and they may collect information whose nature the user does not grasp. The ITU report gives examples, including an automated helpline that gave harmful advice and fabricated legal citations (ITU, 2026). The study therefore proposes the concept of "balanced digital trust": benefiting from technology without either wholesale rejection or uncritical belief. Such trust can be built through short, graduated training using everyday examples, such as verifying a banking message, checking a medical answer or adjusting an app's permissions.

The evidence supports the value of training, with reservations about its strength. A meta-analysis of digital health literacy programmes for older adults found a large positive effect on self-efficacy in handling online health information, with a standardised mean difference of 0.96 (Dong et al., 2023). In the PRISM randomised trial, computer self-efficacy and proficiency increased in the intervention group (Czaja et al., 2018). However, a rapid review by Public Health Wales concluded that most available studies are of low quality and that certainty in their findings is low, and that removing structural barriers such as internet access and device costs is a precondition for the success of any educational programme (Wale et al., 2024).

Programmes should be designed around individual needs, not preconceptions about age. It is appropriate to offer tracks for beginners, tracks for regular phone users and more advanced

tracks for those who wish to use generative AI tools. Declining to use an application should be a respected choice wherever the service can be provided by other means.

4. Opportunities in Health and Independent Living

Smart applications offer possibilities for medication and appointment reminders, organising health information, analysing certain indicators and supporting communication with caregivers. Remote monitoring may help follow up people who need frequent services. The WHO acknowledges this potential, noting that AI can help predict health risks and events, personalise care management, remotely monitor people at risk of falls or emergencies, and compensate for part of staff shortages (WHO, 2022). The AARP report also indicates that about half of people over 50 use, or are interested in, AI-enabled health devices (Kakulla, 2025b).

These applications nevertheless differ fundamentally in their level of risk and evaluation requirements: a medication reminder is not a system that diagnoses disease, and an assistant that rephrases general information cannot be equated with a clinical decision tool. It is therefore not enough to ask "Is the system accurate?"; one must ask whether it remains accurate and safe across different ages, health conditions, medications and sensory abilities (WHO, 2022). Moreover, a system's success in issuing an alert must not be confused with proof of improved clinical outcomes, as the quality of evidence varies with the application, the sample and the length of follow-up. A review in the *IEEE Sensors Journal* considered the combination of AI and the Internet of Things to be the most suitable solution for continuous monitoring aimed at fall prevention (Mohan et al., 2024), but such studies mostly use technical measures, such as detection accuracy and response speed, which do not in themselves prove fewer falls or hospital admissions in real life. Drawing such conclusions requires comparative studies with adequate follow-up that report false alarms and missed cases, drop-out rates and the burden of unnecessary alerts on caregivers; excessive alarms exhaust the user, while failed alerts give a false sense of security. Tools with medical effects require independent validation, professional oversight and clear procedures for handling errors. This distinction matters even more for generative models, which may give a correct answer in one case and a wrong answer with misleading confidence in another; any programme for senior citizens should therefore include a clear rule against relying on chatbots to adjust medication or interpret emergencies without

review by a health professional. Human medical assessment remains essential for diagnosis and treatment. The WHO made "protecting autonomy" the first of its six principles for the ethics of AI in health, stressing that humans should remain in control of medical decisions and that privacy and informed consent must be respected (WHO, 2021).

In daily life, voice assistants and connected home devices help operate some appliances, call for help and receive information. A recent review notes that wearable devices reduce the feeling of dependence on others (Flor-Unda et al., 2025). These possibilities relate to the concept of "ageing in place", which refers to supporting people to remain in their familiar environment with appropriate services. However, independent living does not justify imposing constant surveillance of movement, conversations or behaviour. Sharkey and Sharkey warned early on that automated care technologies may erode privacy and personal liberty and reduce human contact if designed to serve institutional efficiency rather than the person's interest (Sharkey & Sharkey, 2012). The nature of devices and the data they collect must be explained, those who may access the data identified, and the user's preferences respected.

Assistive technologies for speech-to-text, translation and simplified service interfaces can also widen opportunities to participate in education, cultural activities and volunteering. An OECD paper indicates that the experience of older workers tends to complement AI rather than be replaced by it (André & Schief, 2026), which allows their contribution to continue where lifelong learning is available. These technologies may also be used to document social memory and pass on older persons' experience to new generations, provided privacy and content owners' rights are respected.

5. Social Relationships and Economic Security

Digital assistants can make it easier for older persons to stay in touch with their families, arrange calls and be reminded of activities and occasions. The PRISM trial offers a useful example of what technology can and cannot do: in this trial of 300 older adults at risk of isolation, with a mean age of 76, the intervention group reported significantly less loneliness and higher perceived social support and well-being after six months, but the differences between the groups were not

maintained at twelve months (Czaja et al., 2018). The effect is real, but it requires sustainability that the device alone cannot provide.

Discussion of social robots requires distinguishing between physical robots, voice assistants and text chatbots, and between loneliness as a subjective feeling and social isolation, which can be measured by the number of relationships. A meta-analysis of eight randomised trials among residents of long-term care facilities found large, significant effects in reducing loneliness and depression; group activities with the robot were more beneficial for depression than individual use, and longer interventions improved outcomes (Yen et al., 2024). In a systematic review of AI applications covering nine studies, six of them randomised trials, six studies showed a significant reduction in loneliness while three found no significant effect, often because of short duration or limited interaction (Yang et al., 2025). A third meta-analysis of 19 studies and 1,083 participants found a significant effect that was larger in institutional settings than among people living independently, and stronger in Japan and Turkey than in the United States (Mehrabi & Ghezlbash, 2025) — an observation worth testing in the family-centred UAE context. In a field study in which socially assistive robots were placed in older persons' homes for two to six weeks, involving 90 older adults and caregivers in Italy, Switzerland and the Netherlands, personalisation and interactivity emerged as the most important factors in user experience, alongside embodiment, ethical considerations, connectedness and dignity (Hofstede et al., 2025); in other words, acceptance of a robot depends on its ability to adapt to the person, not on its mere presence. By contrast, an umbrella review of thirty-five systematic reviews found no pooled effect on quality of life, anxiety or depression, stating only that socially assistive robots "may" improve loneliness and social interaction, and calling for cost-effectiveness analysis before recommendations are made (Nichol et al., 2024). It should be noted that some of these trials are short and their results may be influenced by the novelty of the technology or the presence of researchers; that the institutional settings of most studies limit their generalisation to people living with their families; and that interaction with a social robot is not equivalent to a human relationship, as evidence of its lasting effect on loneliness and quality of life is mixed. It should therefore be assessed as a possible supportive tool, not a guaranteed substitute for family and community ties; designed to enrich group activities rather than replace human contact; monitored for side effects such as emotional dependence or reduced family contact; evaluated with validated

psychological scales rather than participant satisfaction alone; and used with attention to the risk of emotional deception among people with cognitive impairment (Sharkey & Sharkey, 2012).

In the financial sphere, systems that detect unusual activity and simplified account interfaces can support user independence. On the other hand, the generation of voice, images and text gives fraudsters opportunities to impersonate family members or trusted institutions. In December 2024, the US Federal Bureau of Investigation warned that fraudsters use generative AI to produce fake text, images and videos, and "voice cloning" to imitate a relative's voice in a staged crisis and request money, and recommended that families agree on a secret word to verify identity (FBI IC3, 2024).

The figures confirm the scale of the problem. According to the 2025 annual report of the Internet Crime Complaint Center, as reported by AARP, people over 60 reported losses of about USD 7.7 billion, an increase of nearly 60% over 2024 and the highest of any age group (AARP, 2026). This figure represents total reported online fraud in the United States and does not isolate losses in which voice- or image-generation tools were proven to have been used; the study therefore refrains from attributing these losses to AI alone. Actual reporting is also lower than the true scale, owing to embarrassment and procedural difficulty.

Spotting linguistic errors is no longer sufficient protection; the danger grows when a polished message is combined with time pressure, an urgent financial request and a claimed family tie or official status. Prevention requires independent verification channels — such as ending the call and calling back a previously known number — not responding to urgent transfer requests, easier reporting of suspicious transactions, and clear statements from banks that sharing a verification code with any caller is never required. Yet placing the burden of protection on the user alone is insufficient; institutions are able to detect unusual transactions and provide rapid ways to stop them while respecting the user's right to have the decision reviewed, without anti-fraud tools turning into disproportionate surveillance or automatic exclusion on grounds of age. Nor should fear of fraud become a pretext for automatically taking over an older person's accounts or depriving them of managing their own money; protection that confiscates the decision merely shifts the harm from the fraudster to the protector.

6. Risks and Rights-Based Safeguards

Digital exclusion consists of being unable to benefit in practice from a service because of barriers of skill, design, cost or access. This can happen when an online platform becomes the only way to book an appointment or submit an application, without adequate assistance. The ITU report warns of the "structural exclusion" facing those who lack AI literacy as public, financial and health services move to digital channels, and recommends that governments retain options involving human intervention in public services (ITU, 2026). The United Nations Economic Commission for Europe has likewise called for equal access to digital goods and services through participatory design, and for the protection of dignity, autonomy, privacy and transparency regarding monitoring and data collection (UNECE, 2021). Fairness requires a service to be usable in practice, not merely available in theory.

Algorithmic age discrimination arises when unrepresentative data or design assumptions lead to less accurate or more unfair outcomes for certain age groups. Chu and colleagues introduce the concept of "digital ageism" and explain how "cycles of injustice" feed one another: older persons' lower use of technology means less data about them, less data produces less accurate models for them, and less accurate models reduce their willingness to use the technology (Chu et al., 2022). The ITU report describes the same phenomenon as "system invisibility" and considers it more severe for older women (ITU, 2026). The WHO has warned of these risks in health AI, noting that data may not represent older persons or may carry prior stereotypes, and set out eight practical considerations: participatory design with older persons; age-diverse data science teams; age-inclusive data collection; investment in digital infrastructure and digital literacy for users and caregivers; protection of the right to consent and to contest; governance and regulation; more research; and robust ethical processes in development and deployment (WHO, 2022). Their value lies in distributing responsibility among developers, funders and regulators rather than placing the burden of adaptation on the older person alone. One practical application is to measure performance separately for each age group, because high average accuracy in a system tested on younger users may conceal large disparities between groups.

Privacy becomes a central issue when systems collect health or financial data or information about movement inside the home. Responsible use requires minimising data to what is necessary,

clarifying the purposes of collection, and offering understandable options for consent and permission management. It should not be assumed that a family member's consent replaces the older person's will in all cases; this depends on legal capacity and the applicable legal safeguards. This is consistent with the direction established by Article 12 of the UN Convention on the Rights of Persons with Disabilities, which moves from a model of "substituted decision-making" to one of "supported decision-making" (United Nations, 2006), and with the United Nations Principles for Older Persons, which place independence, participation, care, self-fulfilment and dignity at the heart of their rights (United Nations, 1991).

These risks are not evenly distributed within the older population itself; they intersect with gender, geography and income. According to the ITU report, 31% of older women have never used AI, compared with 20% of older men, and 42% of working men aged 55 and over use it, compared with 34% of women in the same group (ITU, 2026). Geographically, the report indicates that AI adoption is growing almost twice as fast in developed regions as in developing ones, while the largest increases in the number of older persons are concentrated in developing regions where technical infrastructure is weakest (ITU, 2026). Speaking of "older persons" as a single category may thus conceal the fact that an older woman with limited income, or one living far from cities, faces an accumulation of barriers that a general training programme does not address. This calls for data disaggregated by age, gender and location.

Supported Autonomy and the Proportionality Standard

A distinction must be drawn between helping an older person understand a decision and making the decision on their behalf. A family may create an online account for an older relative to facilitate services, then keep the passwords and carry out all transactions without involving them; this is faster, but it does not achieve empowerment if the person is able to learn or participate with reasonable support. The study proposes a gradual approach that begins with explanation, moves to shared practice and then to independent use, with assistance remaining available according to the user's wishes and abilities. This is consistent with Article 4 of Federal Law No. (9) of 2019 on the Rights of Senior Citizens, which establishes the right to independence and privacy and obliges the competent authorities to take the measures and procedures necessary to enable senior citizens to manage their lives independently and to make decisions concerning their

property, financial affairs, place of residence and health and preventive care, while respecting the privacy of their lives and their effective communication with others, in accordance with the legislation in force in the State. These guarantees may be relied upon in assessing the impact of smart applications on senior citizens' autonomy, without treating the Law as a direct regulation of AI systems. The study also proposes a proportionality standard for protective measures: an intervention should be necessary to address a specific risk, should yield an expected benefit, and there should be no less restrictive means available. An example is preferring a bank alert that asks for verification of a suspicious transaction over blocking all of an older person's transactions without individual justification. This is a proposed analytical standard, not a test laid down in law.

At the UN level, the Independent Expert on the enjoyment of all human rights by older persons described the impact of assistive technologies, robotics, AI and automation on their rights as a "frontier issue" requiring urgent consideration, stressing a human-rights-based approach and the possible need to review existing normative frameworks (Human Rights Council, 2017).

Decisions affecting fundamental interests require mechanisms for human review, complaint and error correction, with clear identification of the entity responsible for the service. The "human alternative" should not be an unanswered phone number or a complicated complaint form, but a practical route to obtaining help or having a decision reviewed within a reasonable time. The study offers a five-question analytical test: Does the system meet a real need? Does the user understand its limits? Can the user refuse it? Is human review available? Does it actually increase the user's autonomy? These are questions proposed for research, not a legal test laid down in law.

7. The UAE Context

Federal Law No. (9) of 2019 on the Rights of Senior Citizens, and its Executive Regulations issued by Cabinet Resolution No. (9) of 2021, provide a starting point for examining the protection, dignity and well-being of senior citizens. Final citation should refer to the official texts, their status and any subsequent amendments. Detailed rules governing each AI application cannot be attributed to this legislation without an express provision.

At the policy level, the Cabinet adopted the National Policy for Senior Emiratis in October 2018, built on seven pillars: health care, community engagement and active life, effective civic participation, infrastructure and transport, financial stability, safety and security, and future quality of life (Government of the United Arab Emirates, 2018). An undated blog post on the official government portal states that a capacity-building programme for senior citizens targeted 42,170 people with training in smart applications, without explaining the measurement methodology or results; the figure is therefore indicative only and is not relied upon.

Three further instruments are relevant and should be read together. The first is Federal Decree-Law No. (45) of 2021 on the Protection of Personal Data, in force since 2 January 2022, which makes consent the default basis for processing. Its Article 18 establishes the data subject's right to object to decisions resulting from automated processing that have legal consequences or seriously affect them, including profiling, subject to the exceptions set out in the same article, and requires human intervention in the review of automated processing decisions at the data subject's request. This, however, applies within the scope of the Decree-Law and subject to the sectoral exceptions in Article 2, which cover categories of data governed by special legislation, including health, banking and credit data and government data — among the areas most relevant to older persons. It should be noted that the right to request human review under Article 18 is limited to automated processing decisions within the scope of the Decree-Law and does not create a general right to a human alternative for all digital services; the study therefore relies on it in support of its recommendations, while a comprehensive human alternative remains a research recommendation rather than an existing legal obligation. The second is Federal Law No. (2) of 2019 on the Use of Information and Communications Technology in Health Fields, which requires the confidentiality of health data and prohibits its disclosure without the patient's consent except as permitted by law. The third is the UAE Charter for the Development and Use of Artificial Intelligence, issued in July 2024, which contains twelve principles including strengthening human-machine ties, safety, fairness, privacy protection and inclusiveness, but which is a non-binding guidance document without sanctions or complaint mechanisms (UAE Artificial Intelligence Office, 2024).

Arabic-Language Design in Public Services

Clarity of language is a core element of accessibility, but it is not limited to translating an interface into Arabic. An application may display linguistically correct Arabic text that uses complex technical concepts or long instructions that do not help the user understand what will happen after giving consent. Appropriate design requires testing terminology with senior citizens themselves, offering spoken explanations and the option to repeat instructions, and highlighting actions with financial or health consequences. Voice assistants should also accommodate the diversity of dialects and modes of expression, and a system's failure to understand speech should not be taken as evidence of the user's limited ability; it may be a defect in the tool's design or training data, which relates directly to the concept of digital ageism. Public services could adopt an operating rule requiring users to be clearly informed when they are dealing with an automated system, the limits of its answers to be stated, a direct route to a staff member to be provided, and complaints about misunderstood commands or incomplete transactions to be recorded and analysed to improve the service. These are recommendations derived from the rights-based analysis, not a description of practices applied in all UAE institutions.

Analytically, the principles of autonomy, protection, care and privacy make it possible to discuss the effects of smart systems on the lives of senior citizens. Taken together, these instruments reveal a multi-layered protection system, but one dispersed across sectoral laws and guidance documents, with no provision expressly addressing older persons' particular position vis-à-vis smart systems, such as explaining services in plain language or guaranteeing an alternative human channel. The study proposes integrating digital transformation with these principles through accessible education, accessible services, fraud protection and human alternatives where needed. National studies are still needed to measure levels of use, skills, trust and actual outcomes, rather than generalising indicators from other countries; the author found no published survey measuring senior citizens' use of AI tools in the UAE specifically.

8. The Proposed Safe Digital Empowerment Model

The proposed model rests on four interrelated tracks. The first is education, through short, practical training in Arabic that starts with handling devices and information and moves on to

verifying outputs and protecting accounts. The second is inclusive design, through clear interfaces, customisable voice and text options, and usability testing in which senior citizens themselves take part. The third is protection, including transparency, data minimisation, fraud awareness, and the availability of objection and human review. The fourth is evaluation, through indicators measuring task completion, balanced trust, safety, autonomy and satisfaction. The following table sets out the basis for each track and its proposed indicators.

Track	Objective	Proposed indicators	Basis in the literature
Education	Raise skills and balanced trust	Completing specific tasks without help; ability to detect a fraudulent message; self-efficacy scale before and after training	Dong et al., 2023 Czaja et al., 2018 Wale et al., 2024
Inclusive design	Remove usability barriers	Number of steps to complete a service; error rate; share of older persons in usability testing	UNECE, 2021 ITU, 2026 Kakulla, 2025b
Protection	Safeguard privacy, money and will	Availability of an alternative human channel; response time to objections; number of reports and funds recovered	WHO, 2022 FBI IC3, 2024 Decree-Law 45/2021
Evaluation	Verify actual impact	Indicators of autonomy, loneliness and quality of life at six and twelve months	Czaja et al., 2018 Nichol et al., 2024

For autonomy, the model measures whether users understand the options and can change or refuse them without unwanted interference; for privacy, their understanding of the purpose of

data collection and their ability to adjust or stop permissions. Safety is measured through simulated scenarios that do not expose participants to real fraud, such as showing a suspicious message and asking about verification steps; ease of use and error rates are compared across groups with different digital experience and sensory needs, without assuming that age alone explains the difference; and qualitative indicators of dignity and respect are added. To ensure validity, the indicators should be reviewed by experts in older persons' rights, gerontology, service design and psychometrics, then piloted with a small group before their validity and reliability are studied; the index is not presented as a validated instrument or as having established numerical weights. Responsibilities are distributed so that service providers test accessibility and provide objection channels, developers document the limits and errors of their systems, community organisations take part in training, and universities carry out independent evaluation — preventing empowerment from being reduced to general advice to the user alone. Because the effect of the PRISM trial faded after intensive support ended, evaluation should include relatively long follow-up, and education should include periodic refresher sessions. User satisfaction alone is not enough; indicators must cover the ability to refuse and object, not only the ability to use.

The model is proposed for future testing in a pilot study with measurements before and after training and subsequent follow-up, with voluntary participation and data protection. It must not be presented as an existing government programme or as a statistically validated measurement instrument; it is a research concept that requires development and testing.

9. Discussion and Recommendations

A comparison across areas of use shows that technical progress may produce conflicting effects where safeguards are absent. Health monitoring may support care while intruding on privacy; digital banking may increase speed while creating a new barrier; and a social assistant may facilitate contact without replacing human relationships. The evaluation of AI must therefore combine performance efficiency, fairness of access and freedom of choice.

The evidence allows specific conclusions rather than absolute judgements: the age gap in use is clear in countries for which data exist, but it cannot be used to estimate the UAE situation; social and health benefits are promising but mostly rest on small, institutional or short-term studies or

on technical measures; financial risks are documented by rising figures; and age discrimination arises from data, design and governance, requiring institutional responsibility that goes beyond individual training. Policy should therefore treat the risks as established and the benefits as promising but in need of measurement.

The study recommends graduated training programmes, involving older persons in designing and testing applications, providing human channels for essential services, establishing clear review and complaint procedures, and raising awareness of deepfakes and impersonation. These can be detailed by responsible party:

- **Families:** agree on a family code word and a firm rule of no money transfers before calling the person on their known number; teach one skill at a time with patience and repetition; and offer support in a way that transfers knowledge rather than replacing the older person's decision whenever they are able to make it.
- **Service institutions and banks:** retain an alternative human channel for every essential service moved to a chatbot; and provide early-warning systems for unusual transfers, with an optional "trusted person" who is notified of suspicious activity without being given authority over the account.
- **Government bodies:** include AI and digital-security skills in senior citizens' empowerment programmes and measure their results with published indicators; collect national data on use and digital fraud; and consider the need for regulatory treatment of older persons' right to an alternative human channel and to plain-language explanations of automated decisions.
- **Developers:** include older persons in training data and usability testing; provide interfaces with large text, Arabic voice control and fewer steps; and give a clear notice when the user is talking to a machine rather than a person.

In terms of beneficiaries, the human channel and basic training mainly serve those who are offline and beginners; verification recommendations serve regular phone users, who are most exposed to fraud; and modules on verifying generative AI outputs serve advanced users.

The study proposes implementation in three phases according to the severity of risks and feasibility: first, fraud awareness, account protection and a human alternative in essential services, as these can be assessed with direct indicators; second, expanded training in smart tools and the development of accessible Arabic interfaces; and third, evaluation of more complex health and social applications through independent studies that take account of informed consent, unintended effects and the durability of benefits. A research register is proposed that links each intervention to specific outcomes with pre-announced measurement criteria, records negative results alongside positive ones, and includes the views of those who chose not to use the technology, so that success is not reduced to the experiences of enthusiastic users.

The study proposes that local research begin with a qualitative phase listening to senior citizens, their families and service staff, followed by a quantitative study with a diverse sample that is not limited to the most digitally active visitors of community centres, with the option to participate on paper or by telephone so that less frequent technology users are not excluded from the outset, and that distinguishes between voluntary non-use, lack of knowledge, difficulty of access and low trust. This research should centre on three priority questions: What is the level of senior citizens' use of AI tools, their skills and their trust in them, measured with a validated and translated instrument? What is the scale and pattern of digital fraud targeting them, based on anonymised police and banking data? And what is the actual effect of skills- and autonomy-based empowerment programmes at six and twelve months? Answering these questions is a precondition for turning the above recommendations from general proposals into measurable policies.

10. Conclusion

Artificial intelligence is neither an absolute benefit nor an inevitable danger for older persons. Its actual effect depends on the type of application, its design and the institutional and social environment in which it is used. The rights-based value of technology is realised when it expands a person's choices, supports their autonomy and protects their privacy — not when it imposes a service they cannot understand or takes the place of their will.

In the United Arab Emirates, an approach to safe digital empowerment can be developed that draws on the frameworks for senior citizens' rights, data protection and AI ethics, combining education, inclusive design, protection and evaluation. The first practical step is to measure the local reality, because what is not measured cannot be managed. The guiding principle remains: protection without confiscating the decision, and innovation without excluding the human being.

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