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## Empowering Older Adults Through Digital Technology: A Conceptual Framework for Enhancing Online Social Resilience and Well-Being

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### ABSTRACT

Population ageing and rapid digital transformation highlight the need for frameworks that move beyond digital access and basic literacy to address older adults' capacity to navigate, adapt to, and benefit from online environments. This conceptual paper develops an integrated framework for Online Social Resilience (OSR), defined as older adults' capacity to maintain meaningful social relationships through digital technologies, adapt to continuing technological change, and manage online risks such as misinformation, fraud, and privacy threats. The framework was developed through a structured narrative review, the thematic integration of six complementary perspectives—a WHO-informed age-friendly digital ecosystem, Uses and Gratifications Theory, Bourdieu's Cultural Capital, Putnam's Social Capital, the Technology Acceptance Model, and Human–Computer Interaction principles—and structured consultations with practitioners working with older adults in Thailand. Contextual and relational conditions are positioned as antecedents, while accessible design, perceived usefulness, and perceived ease of use function as mechanisms supporting sustained digital engagement. Sustained engagement, in turn, contributes to the relational, adaptive, and protective dimensions of OSR and to longer-term outcomes such as social participation, autonomy, digitally enabled social capital, and psychological well-being. The framework is operationalised through six intervention pillars, illustrated through Thai initiatives, and supported by three testable propositions and a proposed mixed-methods research agenda. By distinguishing OSR from digital inclusion, digital literacy, digital resilience, digital capability, social connectedness, and technology acceptance, the paper provides a clearer conceptual basis for designing and evaluating initiatives that support older adults' meaningful, sustained, and safe participation in digital society.

**Keywords:** online social resilience, older adults, digital inclusion, digital safety, digital ageing

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## **1.0 Introduction**

### ***1.1 Background and Problem***

Digital technology mediates an expanding share of communication, public services, health information, and economic participation. However, older adults continue to face disproportionate barriers to meaningful digital engagement, producing what has been termed the “grey digital divide” (Friemel, 2016; Seifert et al., 2021). These barriers extend beyond access to devices. They include limited skills, low confidence, physical and cognitive constraints, narrow social support, and, increasingly, vulnerability to misinformation and online fraud (Buchanan & Whitty, 2014; Wardle & Derakhshan, 2017). The stakes are high: loneliness and social isolation in later life are established risk factors for reduced well-being and higher mortality (Cacioppo & Patrick, 2008; Holt-Lunstad et al., 2015), and digital connection is one of the few scalable means of mitigating them. Thailand is among the countries undergoing the most rapid demographic shift toward an ageing society while simultaneously pursuing aggressive digital-economy policy agendas (Supakul & Toyoda, 2026). Therefore, the gap between policy ambition and the lived digital experience of older adult is both a social inclusion and public health issue.

Existing scholarship has examined isolated facets of this problem, such as training programmes (Czaja et al., 2019), digital and social exclusion in later life (Seifert et al., 2021), social support and intergenerational mentoring (Lee & Kim, 2019), and the contribution of online activity to subjective well-being (Sims et al., 2017). To the author’s knowledge, existing research has not yet integrated these strands into a single higher-order framework addressing older adults’ relational, adaptive, and protective capacities in digital environments.

### ***1.2 Defining Online Social Resilience and Its Originality***

This paper defines Online Social Resilience (OSR) as an older adult's integrated capacity to (a) maintain and build meaningful social relationships through digital means, (b) adapt to continuing technological change rather than mastering a single device or platform, and (c) recognise and manage digital risks such as misinformation, financial scams, and privacy threats. OSR is therefore not a synonym for any of the constructs with which it is sometimes conflated, and this distinction matters for both research design and policy. Digital inclusion typically denotes access and basic participation (Friemel, 2016; van Dijk, 2020); OSR adds adaptive and protective capacity once access is established. Digital literacy refers to a set of operational and informational skills (Hargittai, 2010); OSR treats these skills as one input among several and locates them within a social and motivational system. Digital resilience, as commonly used, denotes an individual's capacity to understand online threats, acquire relevant knowledge and skills, recover from technology-related stress, and adapt to digital challenges (Sun et al., 2022); OSR is narrower in population and broader in scope, in that it is specific to later life and integrates a relational dimension—building and sustaining social ties online—that generic digital-resilience accounts do not require. Digital capability frameworks describe the graduated proficiencies that equip individuals to live, learn, and work in a digital society (Jisc, 2015); OSR is not a proficiency ladder but a systemic capacity that couples skills with motivation, social support, and safety. Social connectedness describes the state of one's relationships—a subjective evaluation of the extent to which one has meaningful, close, and constructive relationships with others (O'Rourke & Sidani, 2017)—whereas OSR describes the capacity to sustain that state under technological change. Finally, the Technology Acceptance Model (Davis, 1989) explains intention to use a specific technology; OSR is a trans-platform, longitudinal capacity that incorporates acceptance as a mediator but extends beyond it. In short, OSR is a higher-order, capability-oriented construct that integrates the structural, motivational, behavioural, relational, and protective dimensions of older adults' digital lives.

### **1.3 Research Objectives and Contributions**

This paper addresses three objectives.

1. To define OSR precisely and to distinguish it from related constructs, including digital inclusion, digital literacy, digital resilience, digital capability, and technology acceptance.
2. To design an integrated conceptual framework for OSR that links theoretical foundations to intervention components and anticipated outcomes.
3. To propose a research agenda, including a mixed-methods design situated in the Thai context, through which the framework and its propositions can be empirically tested in future work.

The contributions of this paper are three-fold. First, it offers a precise definition of OSR and articulates its distinction from related concepts. Second, it integrates six theoretical perspectives into a single propositional model in which the antecedents, mediators, and outcomes are explicit rather than listed in parallel. Third, it operationalises the model through six intervention pillars, including a new pillar on digital safety and critical media literacy that responds to the risk dimension of resilience.

## **2.0 Theoretical Foundations**

The OSR framework draws on several complementary perspectives operating at different levels of analysis. Rather than treating all of them as equivalent theories, the framework distinguishes between contextual conditions, relational and psychological mechanisms, and technology-design principles. Social Capital Theory and the Technology Acceptance Model provide the principal explanatory foundations. These are situated within a WHO-informed age-friendly digital context and supplemented by cultural capital, Uses and Gratifications Theory, and Human–Computer Interaction principles.

Together, these perspectives explain how older adults' social resources, prior experience, motivations, and interactions with technology shape their capacity to maintain online relationships, adapt to technological change, and manage digital risks.

### **2.1 A WHO-Informed Age-Friendly Digital Ecosystem**

The broader context of the OSR framework is an age-friendly digital ecosystem developed from the World Health Organization's age-friendly environments approach and the Decade of Healthy Ageing agenda (World Health Organization [WHO], 2007, 2021). This author-developed synthesis identifies four interdependent conditions—inclusion, accessibility, empowerment, and participation—that support meaningful digital engagement in later life.

The WHO-informed ecosystem is not treated as an individual-level theory. Instead, it represents the distal institutional and environmental context within which OSR develops. Access to affordable connectivity, accessible digital services, appropriate training, supportive policies, and meaningful opportunities for participation shapes the digital opportunities available to older adults.

### **2.2 Cultural Capital as a Contextual Condition**

Bourdieu's concept of cultural capital refers to the cultural, educational, linguistic, and dispositional resources that influence an individual's capacity to operate within a particular social field (Bourdieu, 1986). In digital contexts, educational background, previous occupational exposure to technology, language proficiency, and socioeconomic resources can affect both access to technology and the ways in which it is used (Friemel, 2016; van Dijk, 2020).

Within the OSR framework, cultural capital is treated as a background condition and potential moderator rather than as a direct mechanism of technology use. Older adults with greater prior educational and technological experience may find it easier to understand interfaces, evaluate digital information, and transfer existing knowledge to unfamiliar platforms. Consequently, the same intervention may produce different outcomes across educational and socioeconomic groups.

### **2.3 Social Capital as the Relational Foundation of OSR**

Social Capital Theory provides the principal relational foundation of the OSR framework. Social capital refers to resources embedded in social relationships, including bonding ties within close networks and bridging ties that connect individuals to wider groups and sources of information (Putnam, 2000). Social support derived from these relationships may also buffer the negative effects of stress (Cohen & Wills, 1985).

For older adults, social capital can support digital engagement by providing encouragement, instruction, troubleshooting assistance, and reassurance when difficulties arise. Family members, peers, community organisations, and intergenerational mentors may therefore facilitate the acquisition and continued use of digital technologies (Lee & Kim, 2019).

Social capital may also develop as an outcome of successful digital engagement because online communication can help older adults maintain existing relationships, revive weaker ties, and participate in new communities. To avoid conceptual circularity, the framework distinguishes between baseline social capital, which functions as an antecedent, and digitally enabled social capital, which may emerge as an outcome of OSR.

#### ***2.4 Technology Acceptance and User Motivation***

The Technology Acceptance Model proposes that perceived usefulness and perceived ease of use influence behavioural intention and subsequent technology use (Davis, 1989). The model has also been applied to the study of technology adoption among older adults, although later-life adoption may involve additional social, physical, and contextual considerations (Renaud & van Biljon, 2008).

Perceived usefulness concerns whether a technology is regarded as beneficial for achieving a relevant goal, whereas perceived ease of use concerns the degree to which its use is expected to require limited effort (Davis, 1989). Within the OSR framework, these perceptions operate as proximal psychological mechanisms linking contextual resources and intervention design to sustained digital engagement.

Uses and Gratifications Theory further explains how individuals actively select media to satisfy needs such as interpersonal communication, information seeking, entertainment, and identity expression (Katz et al., 1973; Papacharissi & Rubin, 2000). In the proposed framework, anticipated gratifications are expected to shape perceived usefulness. Technologies that support personally meaningful goals, such as communicating with family, accessing health information, or participating in community activities, are therefore more likely to be perceived as useful.

Uses and Gratifications Theory is thus incorporated as a motivational lens within the technology-acceptance process rather than treated as a separate causal foundation.

#### ***2.5 Human–Computer Interaction and Accessible Design***

Human–Computer Interaction principles explain how technology design influences usability, accessibility, and continued engagement. Relevant principles include user-centred design, participatory design, consistency, error tolerance, readable presentation, and adaptation to age-related sensory, motor, and cognitive changes (Czaja et al., 2019; Norman, 2013).

Within the OSR framework, HCI quality is treated as a design condition rather than as a psychological mediator. Accessible interfaces, larger text, clear navigation, simplified menus, voice functions, and opportunities for personalisation can reduce the physical and cognitive effort required to use digital platforms. HCI-informed design is therefore expected to influence continued engagement indirectly by improving perceived ease of use, supporting confidence, and reducing technology abandonment.

#### ***2.6 Integrated Conceptual Model***

The integrated OSR model proposes the following causal structure:

1. Contextual conditions: The WHO-informed age-friendly digital ecosystem shapes access to infrastructure, services, training, and opportunities for participation. Cultural capital influences how effectively older adults are able to use these opportunities.

2. Relational antecedents: Baseline social capital provides access to encouragement, mentoring, practical assistance, and trusted sources of information.
3. Design and psychological mechanisms: HCI-informed design influences perceived ease of use, while personally meaningful gratifications contribute to perceived usefulness. Perceived usefulness and perceived ease of use subsequently influence behavioural intention and sustained digital engagement.
4. Intervention inputs: The six intervention pillars described in Section 3 seek to strengthen digital skills, social support, motivation, accessibility, platform familiarity, and risk-management capacity.
5. OSR dimensions: Sustained engagement contributes to three interconnected dimensions of Online Social Resilience: relational capacity, adaptive capacity, and protective capacity.
6. Longer-term outcomes: Higher levels of OSR are expected to support digitally enabled social capital, social participation, autonomy, and psychological well-being.

The proposed causal sequence can therefore be summarised as follows:

Contextual and relational conditions → accessible intervention and technology design → perceived usefulness and perceived ease of use → sustained digital engagement → relational, adaptive, and protective OSR → social and psychological outcomes.

## **2.7 Propositions**

Based on the integrated conceptual model, the following propositions are advanced:

P1: Cultural capital and baseline social capital moderate the effects of OSR interventions, such that intervention outcomes vary according to older adults' prior educational, technological, and relational resources.

P2: The effects of OSR interventions on sustained digital engagement are mediated by perceived usefulness and perceived ease of use, with HCI-informed design contributing primarily through its effect on perceived ease of use.

P3: Older adults who receive digital-safety and critical-media-literacy training in addition to general digital-literacy training will demonstrate greater improvement in the protective dimension of OSR than those who receive general digital-literacy training alone.

## **3.0 The Online Social Resilience Framework**

### **3.1 Framework Overview**

The Online Social Resilience (OSR) framework integrates the contextual, relational, technological, and motivational conditions that shape older adults' sustained participation in digital environments. As illustrated in Figure 1, the framework organises these elements into five connected components: contextual and relational antecedents, intervention pillars, technology-acceptance mechanisms, the three dimensions of OSR, and longer-term social and psychological outcomes.

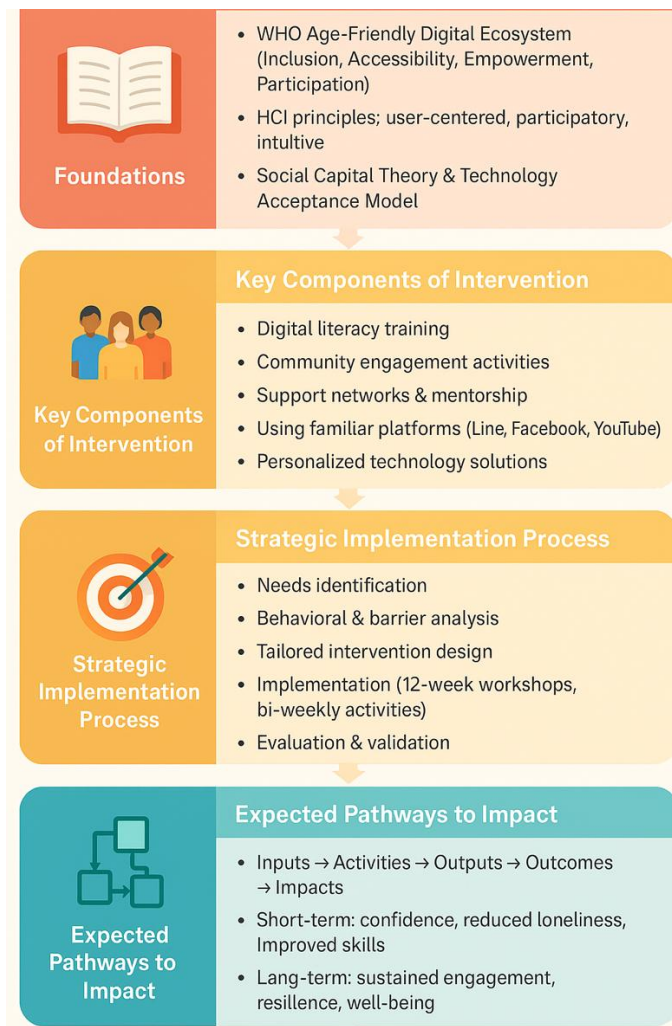
The WHO-informed age-friendly digital ecosystem provides the broader institutional and environmental context for the framework. Its four dimensions—inclusion, accessibility, empowerment, and participation—are incorporated into the model rather than presented as a separate framework. Inclusion is supported through community engagement and social-support networks; accessibility is addressed through personalised and HCI-informed technology solutions; empowerment is strengthened through digital-literacy and digital-safety training; and participation is encouraged through the use of familiar digital platforms.

Cultural capital and baseline social capital function as contextual and relational antecedents. These factors influence older adults' ability to access, interpret, and benefit from digital opportunities. The six intervention pillars are intended to strengthen relevant skills, motivation, support, accessibility, platform

familiarity, and protective capacity. Their effects on sustained digital engagement are expected to operate partly through perceived usefulness and perceived ease of use. Sustained engagement subsequently contributes to the relational, adaptive, and protective dimensions of OSR, which may support social participation, autonomy, digitally enabled social capital, and psychological well-being.

**Figure 1**

*Conceptual Framework of Online Social Resilience: Antecedents, Intervention Pillars, Mediating Mechanisms, OSR Dimensions, and Anticipated Outcomes (Created by author)*



*Note.* Author-developed framework based on the WHO age-friendly environments approach (World Health Organization, 2007, 2021), Cultural Capital (Bourdieu, 1986), Social Capital Theory (Putnam, 2000), Uses and Gratifications Theory (Katz et al., 1973; Papacharissi & Rubin, 2000), the Technology Acceptance Model (Davis, 1989), and Human–Computer Interaction principles (Czaja et al., 2019; Norman, 2013).

### 3.2 The Six Intervention Pillars

The framework is operationalised through six modifiable intervention pillars. Together, these pillars address the skill-based, relational, motivational, accessibility, behavioural, and protective conditions required for meaningful and sustained digital engagement among older adults.

### **3.2.1 Pillar 1: Digital Literacy Training**

Digital-literacy training develops older adults' ability to use smartphones, internet-based services, social media, and digital transaction platforms. Effective programmes should be practical, hands-on, conducted in small groups, and paced according to the learning needs of older adults (Czaja et al., 2019; van Dijk, 2020). Training should extend beyond basic device operation to include information searching, communication, online-service use, and independent problem-solving.

### **3.2.2 Pillar 2: Community Engagement Activities**

Community engagement provides socially meaningful reasons for older adults to use digital technology. Online and face-to-face activities, including virtual hobby groups, online book clubs, community discussions, and interest-based programmes, can promote belonging and create opportunities to practise newly acquired skills (Findlay, 2003). This pillar connects digital participation with social interaction rather than treating technology use as an isolated technical activity.

### **3.2.3 Pillar 3: Support Networks**

Support networks include intergenerational mentoring, peer assistance, family guidance, and community-based technical support. Such networks provide encouragement, instruction, troubleshooting assistance, and reassurance when difficulties arise (Lee & Kim, 2019). They also help older adults develop practical knowledge that may be difficult to acquire through formal training alone. Within the OSR framework, support networks strengthen baseline social capital and help sustain digital engagement beyond structured learning sessions.

### **3.2.4 Pillar 4: Use of Familiar Platforms**

Interventions should initially employ platforms that older adults already recognise or encounter in their daily lives. In Thailand, these may include LINE, Facebook, and YouTube. Beginning with familiar technologies can reduce the effort associated with learning new systems and may improve perceived ease of use and perceived usefulness. Familiar platforms can also facilitate communication with family members, access to community information, and participation in online activities.

### **3.2.5 Pillar 5: Personalised Technology Solutions**

Personalised technology solutions address differences in older adults' sensory, motor, cognitive, linguistic, and experiential needs. HCI-informed adaptations may include larger text, simplified menus, clear navigation, voice-control functions, adjustable display settings, and customised application layouts (Czaja et al., 2019; Norman, 2013). These adaptations can reduce cognitive and physical demands, improve usability, and lower the likelihood of technology abandonment.

### **3.2.6 Pillar 6: Digital Safety and Critical Media Literacy**

Digital safety and critical media literacy address the protective dimension of OSR. Older adults may encounter phishing, romance scams, fraudulent investment schemes, impersonation fraud, privacy threats, and health misinformation in online environments (Buchanan & Whitty, 2014; Wardle & Derakhshan, 2017). Training under this pillar should enable older adults to recognise common scam patterns, assess the credibility of online information, manage basic privacy settings, protect personal and financial information, and report suspicious content through appropriate channels.

This pillar extends conventional digital-literacy interventions by recognising that meaningful digital participation requires not only the ability to use technology, but also the capacity to navigate online risks critically and safely.

Table 1 summarises the purpose, theoretical basis, and anticipated contribution of each intervention pillar.

**Table 1**  
*Intervention Pillars of the Online Social Resilience Framework*

| <b>Intervention Pillar</b>                 | <b>Principal Theoretical Basis</b>                             | <b>Purpose and Focus</b>                                                                         | <b>Anticipated Contribution</b>                                           |
|--------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Digital Literacy Training                  | Digital inclusion and capability perspectives                  | Develop operational, informational, communication, and online-service skills                     | Greater confidence, self-efficacy, and independent technology use         |
| Community Engagement Activities            | Uses and Gratifications Theory and Social Capital Theory       | Create socially meaningful opportunities to practise digital participation                       | Stronger belonging, social interaction, and sustained engagement          |
| Support Networks                           | Social Capital Theory                                          | Provide mentoring, encouragement, troubleshooting assistance, and peer or family support         | Faster skill development, reduced anxiety, and continued technology use   |
| Use of Familiar Platforms                  | Technology Acceptance Model and Uses and Gratifications Theory | Reduce learning demands by beginning with recognised and personally meaningful platforms         | Greater perceived usefulness, ease of use, and willingness to participate |
| Personalised Technology Solutions          | Human–Computer Interaction principles                          | Adapt interfaces and services to sensory, motor, cognitive, and experiential differences         | Improved accessibility, usability, and reduced technology abandonment     |
| Digital Safety and Critical Media Literacy | Digital-resilience and media-literacy perspectives             | Develop the ability to recognise scams, evaluate information, manage privacy, and report threats | Stronger protective capacity and reduced vulnerability to online harm     |

*Note.* Developed by the author based on Bourdieu (1986), Buchanan and Whitty (2014), Czaja et al. (2019), Davis (1989), Katz et al. (1973), Norman (2013), Papacharissi and Rubin (2000), Putnam (2000), van Dijk (2020), and Wardle and Derakhshan (2017). The anticipated contributions are theoretical expectations requiring empirical testing.

### **3.3 Expert Consultation and Framework Refinement**

The proposed framework was refined through structured consultations with 55 experts working with older adults in Thailand. The experts were drawn from the fields of education, healthcare, and local government and had direct experience in older-adult services, digital-literacy programmes, or related policy development.

The consultation process involved two stages. First, the experts reviewed the definition of Online Social Resilience, the theoretical foundations of the framework, and the proposed relationships among the antecedents, mediating mechanisms, intervention pillars, OSR dimensions, and anticipated outcomes. Their feedback was used to clarify the boundaries of the OSR construct, refine the organisation of the framework, and strengthen the propositions presented in Section 2.7.

Second, the experts assessed the relevance, clarity, and practical applicability of the six intervention pillars. Their comments informed revisions to the descriptions, scope, and anticipated contributions of the pillars. The consultation therefore served as a framework-refinement exercise rather than an



empirical test of the proposed relationships. Formal testing and validation of the framework and its propositions remain priorities for the research agenda presented in Section 5.

### 3.4 Strategic Implementation Process

Figure 2 presents the proposed implementation process for translating the Online Social Resilience framework into practice. The process comprises five interconnected stages.

1. Needs assessment. Focus groups, expert consultations, and preliminary surveys are used to identify older adults' digital practices, support needs, and priority concerns.
2. Behavioural and barrier analysis. The information gathered is analysed to identify gaps in digital skills, motivational factors, accessibility challenges, social-support needs, and exposure to online risks.
3. Intervention design. Digital-literacy workshops, community-engagement activities, mentoring arrangements, accessibility adaptations, and digital-safety modules are tailored to the needs identified during the earlier stages.
4. Programme implementation. A proposed 12-week programme combines weekly digital-literacy and online-safety sessions with bi-weekly community-based engagement and peer-support activities.
5. Evaluation and framework refinement. Pre- and post-intervention surveys, focus-group discussions, and qualitative interviews are used to assess changes in digital skills, confidence, sustained engagement, social participation, and protective behaviour. The findings are then used to refine the intervention components and the broader OSR framework.

**Figure 2**

*Proposed Strategic Implementation Process for the Online Social Resilience Framework*



*Note.* The process represents a proposed implementation and evaluation pathway and has not yet been empirically tested.

### **3.5 Expected Pathways to Impact**

The framework's logic model—Inputs → Activities → Outputs → Outcomes → Impacts—is as follows.

- Inputs: trained facilitators, accessible training materials, digital tools, community partnerships, and a safety/critical-media curriculum.
- Activities: literacy workshops, engagement events, mentoring sessions, platform adaptation, and dedicated digital-safety modules.
- Outputs: trained older adults, observable social participation, increased use of familiar platforms, and demonstrated safety behaviours.
- Short-term outcomes: increased confidence, reduced loneliness, improved digital skills, and reduced susceptibility to common online scams.
- Long-term outcomes: sustained digital engagement, stronger community resilience, improved health management, and a higher level of OSR overall.
- Impacts: social inclusion, mental well-being, empowered participation, and protective capacity in the digital society.

## **4.0 The Thai Context: Demography, Culture, and Case Studies**

### **4.1 Demographic and Cultural Context**

Thailand became an "aged society" in 2023, when the share of adults aged 60 and over surpassed 20 percent of the population, and is projected to become a "super-aged society" by 2029, when more than 20 percent of the population will be aged 65 and over (Krungsri Research, 2024; Supakul & Toyoda, 2026). Three features of the Thai context shape how OSR plays out in practice. First, the family remains the principal unit of digital support: many older Thais are introduced to LINE, mobile banking, and health applications by adult children or grandchildren, and communication technology has become central to sustaining intergenerational relationships, particularly where younger family members have migrated to urban areas (Thomas, 2020), making intergenerational mentorship (Pillar 3) culturally well-fitted. Second, the dominant platforms in everyday Thai digital life—LINE, the country's primary messaging application with approximately 56 million monthly active users, Facebook with 51.5 million users, and YouTube with 47.2 million users (Kemp, 2025)—are the natural anchor points for the Familiar Platforms pillar. Third, online scams targeting Thai older adults, including impersonation of officials, fraudulent investment offers, and fake parcel-delivery messages, have grown sharply alongside digital adoption; older adults constitute one of the largest victim groups of online fraud in Thailand, yet only about a quarter report incidents to the police (Safer Internet Lab, 2025; Saisanan Na Ayudhaya, 2025), making the new digital-safety pillar directly responsive to lived risk. Together these features justify positioning Thailand as the principal context of the framework while keeping the framework itself generalisable.

Thailand is projected to become a "super-aged society" within the current decade, with older adults reaching over 20 percent of the population. Three features of the Thai context shape how OSR plays out in practice. First, the family remains the principal unit of digital support: many older Thais are introduced to LINE, mobile banking, and health applications by adult children or grandchildren, which makes intergenerational mentorship (Pillar 3) culturally well-fitted. Second, the dominant platforms in everyday Thai digital life—LINE for messaging and community groups, Facebook for community news, and YouTube for entertainment and informal learning—are the natural anchor points for the Familiar Platforms pillar. Third, online scams targeting Thai older adults (impersonation of officials, fraudulent investment offers, fake parcel-delivery messages) have grown sharply alongside digital adoption, making the new digital-safety pillar directly responsive to lived risk. Together these features justify positioning Thailand as the principal context of the framework while keeping the framework itself generalisable.

## **4.2 Illustrative Thai Initiatives**

### **4.2.1 Young Happy**

Young Happy is a Thai social enterprise that operates a community platform specifically for older adults. Its app provides a familiar, Facebook-style environment for sharing experiences, joining interest groups, and accessing online courses (Young Happy, 2023). It illustrates how Pillars 2 (Community Engagement) and 4 (Familiar Platforms) can be combined in a single product.

### **4.2.2 Thai Health Promotion Foundation (ThaiHealth)**

In collaboration with Young Happy, ThaiHealth runs the "Retirement Class" online course covering lifestyle, mental health, finance, technology, and hobbies (Thai Health Promotion Foundation, 2024). It demonstrates Pillar 1 (Digital Literacy Training) embedded in a broader well-being curriculum.

### **4.2.3 Digital Economy Promotion Agency (depa)**

Through depa's partnership with Sea (Thailand) and Young Happy, the "Easy Shopping, Smooth Selling" course taught older Thai adults to use e-commerce platforms during the COVID-19 period (Digital Economy Promotion Agency, 2022). The case shows how Pillar 4 (Familiar Platforms) and Pillar 5 (Personalised Solutions) operate together in a policy-backed programme.

### **4.2.4 ETV and Smart Ageing Academy (KMICE)**

ETV's "Newbie Seniors #Connected to the Online World" introduces essential digital vocabulary and basic application use (Educational Television Station, 2021). The Smart Ageing Academy, run with the Knowledge Management and Innovation Centre for the Elderly (KMICE), delivers online courses on social media, online shopping, and banking (Smart Ageing Academy, 2024). Both initiatives exemplify Pillar 1 supported by Pillar 3 (Support Networks).

These initiatives, taken together, provide a real-world Thai backdrop for the proposed framework. Each programme addresses a subset of the six pillars; none currently spans all six. The OSR framework therefore offers Thai practitioners a diagnostic tool to identify the pillars not yet covered by their current offering—most commonly, the new Pillar 6 on digital safety and critical media literacy.

## **5.0 Proposed Research Agenda: A Mixed-Methods Design for Testing the Framework**

To test the framework and its propositions, a qualitative-led mixed-methods design is proposed (Creswell & Plano Clark, 2018), organised around the three research objectives. Framework development (Objective 2) has been completed through the structured literature review and the expert consultation and framework refinement reported in Section 3.3. Behavioural and barrier understanding would be pursued through focus groups and in-depth interviews (Krueger & Casey, 2015), and intervention assessment (Objective 3) would involve a structured 12-week training-and-engagement programme with pre/post evaluation (Shadish et al., 2002), consistent with prior technology-based interventions for older adults (Czaja et al., 2018). The design is presented here as a proposed agenda

for future work; no primary data from older adult participants have yet been collected, and the outcomes discussed in Section 6 are anticipated rather than observed.

### ***5.1 Sampling Strategy Across Research Stages***

A purposive sampling strategy would be applied across all stages to ensure regional representation in Thailand (Northern, Northeastern, Central, and Southern regions) and inclusion of relevant stakeholders.

#### ***5.1.1 Stage 1: Focus Groups with Older Participants and Advisors***

Participants would be recruited in collaboration with local community centres, senior-citizen clubs, and municipal offices in the four regions. Selection criteria would include being aged 60 years or above, active participation in community activities, and willingness to discuss digital experiences. Each region would contribute at least 10 participants.

#### ***5.1.2 Stage 2: Stakeholder Expert Consultations***

Experts would be identified through institutional networks in education, healthcare, and local government. Recruitment would focus on individuals with direct involvement in older adult care, digital-literacy programmes, or relevant policy development.

#### ***5.1.3 Stage 3: National Survey***

A stratified purposive sampling approach would be applied to achieve balanced representation across regions, gender, and socio-economic status. The sample frame would be developed from existing lists maintained by local administrative organisations and senior-citizen associations. The target sample size is 2,000 participants.

#### ***5.1.4 Stage 4: In-depth Interviews***

A maximum-variation sampling strategy would draw 20 participants from survey respondents indicating willingness for follow-up, ensuring representation of different skill levels, living arrangements, and urban/rural backgrounds.

#### ***5.1.5 Stage 5: Structured Training and Community Engagement***

A 12-week programme would combine weekly small-group workshops of 2–3 hours per session covering smartphone use, online safety, social media, digital transactions, telehealth, scam recognition, and critical evaluation of online information. Bi-weekly peer-led activities, including online hobby clubs, mentoring, and problem-solving exercises, would reinforce skills and build social ties. Recruitment would prioritise individuals identified in the national survey as having low digital skills or high risk of digital isolation; at least 40 participants and 10 community advisors are anticipated.

### ***5.2 Evaluation and Validation Strategy***

Effectiveness would be assessed using pre- and post-intervention Likert-scale surveys, thematic analysis of qualitative data, and structured focus-group discussions. Success indicators would include: (i) frequency and breadth of digital tool use, (ii) self-reported emotional well-being and loneliness, (iii) confidence in using online platforms, and (iv) protective-behaviour indicators, including recognition of scam messages and use of privacy settings. Triangulation across surveys, interviews, and focus groups would support the validity of findings.

## ***6.0 Anticipated Outcomes of the Proposed Study***

### ***6.1 Increased Digital Engagement***

Four anticipated outcomes are aligned with the paper's objectives and the framework's logic model. Because the study proposed in Section 5 has not yet been conducted, these are stated as expectations to be tested, not as findings.

Survey data from up to 2,000 participants, supported by focus-group narratives, are expected to indicate that the proportion of older participants who feel confident using smartphones or tablets increases significantly compared with baseline. Focus-group accounts are expected to describe everyday applications of learned skills, such as using LINE for family communication or Shopee for online shopping.

### **6.2 Enhanced Psychological Well-Being and Social Connectedness**

Participants are expected to report improvements in perceived social connectedness and psychological well-being following the intervention. These changes may include reduced feelings of loneliness, greater confidence in maintaining contact with family and friends, and increased participation in online social and community activities. Qualitative accounts are also expected to illustrate how video calls, online interest groups, peer-support activities, and digital entertainment contribute to a stronger sense of belonging and more frequent social interaction. These anticipated outcomes would provide preliminary evidence of the relational dimension of Online Social Resilience.

### **6.3 Identification of Key Barriers to Digital Adoption**

Survey results would quantify the prevalence of barriers, with focus groups and interviews detailing their nature: social barriers, such as lack of family support; physical limitations, such as vision impairments; and psychological barriers, such as fear of making mistakes, particularly among older adults living alone or in rural areas.

### **6.4 Reduced Vulnerability to Online Risks**

A further anticipated outcome, aligned with Pillar 6, is measurable improvement in scam-recognition accuracy and basic privacy-management behaviours after the safety module of the 12-week programme. This outcome operationalises the protective dimension of OSR.

Table 2 summarises the proposed research stages, activities, participants, and anticipated outputs.

**Table 2**

*Planned Activities and Anticipated Outcomes of the Proposed Research Agenda*

| Stage                        | Activity and participants                                                                                | Data collection or procedure                                                                                                                 | Anticipated output                                                                                                            |
|------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Needs and Barrier Assessment | Focus groups with older adults and community advisors from different regions of Thailand                 | Exploration of digital practices, motivations, accessibility challenges, social-support needs, and exposure to online risks                  | Identification of key barriers, support requirements, and priorities for intervention design                                  |
| Stakeholder Consultation     | Consultations with experts from education, healthcare, local government, and digital-literacy programmes | Review of the proposed OSR framework, intervention pillars, and context-specific implementation considerations                               | Refinement of the framework, proposed indicators, and intervention components                                                 |
| National Survey              | Survey of older adults across regions, gender groups, and socioeconomic backgrounds                      | Collection of quantitative data on digital access, skills, confidence, social engagement, technology acceptance, and online-safety practices | Development of a national profile of OSR-related conditions and identification of groups at greater risk of digital exclusion |

| Stage                               | Activity and participants                                                                                                                   | Data collection or procedure                                                                                               | Anticipated output                                                                                                                  |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| In-depth Interviews                 | Follow-up interviews with selected survey respondents representing different skill levels, living arrangements, and urban or rural settings | Qualitative exploration of participants' digital experiences, support networks, motivations, barriers, and safety concerns | Contextualised understanding of the factors shaping digital engagement and resilience                                               |
| Training and Community Intervention | A 12-week digital-literacy, online-safety, mentoring, and community-engagement programme for selected older adults                          | Pre- and post-intervention surveys, focus-group discussions, observations, and qualitative interviews                      | Preliminary evidence of changes in digital skills, confidence, social participation, sustained engagement, and protective behaviour |

*Note.* The proposed stages form part of a future mixed-methods research agenda. The anticipated outputs represent intended areas of investigation rather than completed findings.

## 7.0 Discussion

### 7.1 Theoretical Contribution and Novelty

The framework contributes to digital-ageing scholarship in three ways. First, it offers a precise definition of Online Social Resilience that incorporates not only engagement and skills but also adaptive capacity and digital safety; this distinguishes OSR from the more frequently discussed but narrower constructs of digital inclusion, digital literacy, social connectedness, and technology acceptance (Section 1.2). Second, the paper moves from a parallel listing of theories to a propositional model—specifying what the framework's elements are, how they relate, and why, in line with established criteria for theoretical contribution (Whetten, 1989)—in which structural and motivational conditions act as antecedents, HCI design quality and TAM-derived perceptions act as mediators, and social capital, well-being, and OSR are outcomes. Third, the addition of a dedicated Digital Safety and Critical Media Literacy pillar fills a gap in earlier conceptualisations of digital inclusion for older adults, which have tended to address skills and connection (e.g., Friemel, 2016; van Dijk, 2020) but not protection from online risks, an omission that has become more consequential as older adults' exposure to fraud and misinformation grows (Seifert et al., 2021; Wardle & Derakhshan, 2017).

### 7.2 Practical Implications

For practitioners and policy actors—particularly in Thailand—the framework functions as a diagnostic and design tool. Existing initiatives each address a subset of the six pillars: YoungHappy's community platform and virtual classes (Asia Health and Wellbeing Initiative, 2025), ThaiHealth's Retirement Class curriculum (Thai Health Promotion Foundation & YoungHappy, 2021), the depa-supported e-commerce course for older adults (Sea (Thailand) et al., 2022), ETV's educational programming (Centre for Educational Technology, 2021), and the Smart Ageing online course (Sukhothai Thammathirat Open University, n.d.). Mapping a programme against the framework makes it visible which dimensions are under-served, especially Pillar 6. The framework's antecedent–mediator–outcome logic also suggests that programmes targeting only skills (the literacy pillar) without addressing motivation (Katz et al., 1973), social context (Putnam, 2000), or platform design (Czaja et al., 2019; Norman, 2013) will see limited and unevenly distributed gains, consistent with evidence that skills-only interventions leave underlying motivational and social barriers intact (Friemel, 2016).

### 7.3 Limitations

The framework presented in this paper is conceptual and is based on literature synthesis and expert consultation; it has not yet been empirically tested at scale. Although the propositions presented in Section 2.7 are designed to be testable, their validity remains to be established through empirical research. The Thai context provides a relevant setting for illustrating the framework, but its application

in contexts with different family structures, dominant digital platforms, institutional arrangements, or patterns of online risk may require adaptation. In addition, the framework-refinement process involved practitioners working with older Thai adults rather than older adults themselves. Future research should therefore involve older adults directly in the evaluation and further refinement of the framework.

#### 7.4 Suggestions for Future Research

Future research should move beyond the conceptual development of OSR towards systematic empirical testing across populations, settings, and implementation conditions. Initial studies should examine whether the proposed intervention pillars and causal relationships operate as expected, particularly the mediating roles of perceived usefulness and perceived ease of use and the moderating effects of cultural capital and baseline social capital. Research should also determine whether the relational, adaptive, and protective dimensions of OSR represent empirically distinct but related components of a higher-order construct. Because digital practices, support structures, platform preferences, and exposure to online risks may vary across communities, comparative research is necessary to establish the framework's contextual sensitivity and broader applicability. Participatory studies involving older adults in the design, implementation, and evaluation of OSR programmes would further ensure that subsequent refinements reflect their lived experiences, priorities, accessibility needs, and perceptions of online safety.

Table 3 presents the principal directions for the future development and empirical evaluation of the OSR framework

**Table 3**  
*Suggested Directions for Future Research on Online Social Resilience*

| Future Research Direction                    | Purpose                                                                                                                                                                                                      |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pilot implementation in diverse settings     | Test the feasibility, acceptability, and adaptability of the framework in different Thai and non-Thai contexts.                                                                                              |
| Longitudinal evaluation                      | Examine whether improvements in digital engagement, psychological well-being, social participation, and protective behaviour are sustained over time.                                                        |
| Cost-effectiveness and scalability analysis  | Assess the resources required to implement OSR programmes and determine their potential for expansion in underserved communities.                                                                            |
| Urban, rural, and socioeconomic comparisons  | Compare outcomes across geographical locations and Cultural Capital groups to test the moderating relationships proposed in P1.                                                                              |
| Development of an OSR measurement instrument | Develop and validate a multidimensional instrument that measures the relational, adaptive, and protective dimensions of OSR and distinguishes them from digital literacy and technology-acceptance measures. |

*Note.* These directions are intended to support the progressive empirical testing, refinement, and application of the proposed OSR framework.

Collectively, these directions provide a basis for the empirical testing, refinement, and wider application of the OSR framework.

#### 8.0 Conclusion

This paper has developed an integrated conceptual framework for Online Social Resilience among older adults, defined as the capacity to maintain meaningful online relationships, to adapt to ongoing technological change, and to manage digital risks. By integrating six theoretical perspectives—the

WHO Age-Friendly Digital Ecosystem, Uses and Gratifications, Bourdieu's Cultural Capital, Putnam's Social Capital, the Technology Acceptance Model, and Human–Computer Interaction—into a propositional model of antecedents, mediators, and outcomes, the framework moves beyond the parallel listing of theories that has characterised earlier work. Six intervention pillars operationalise the model, including a new pillar on digital safety and critical media literacy that explicitly addresses the protective dimension of resilience.

The framework's distinction from related constructs—digital inclusion, digital literacy, social connectedness, and technology acceptance—is articulated in precise terms, and three testable propositions are offered to guide empirical work. The Thai illustrations show that the framework matches the realities of contemporary Thai ageing while remaining transferable to other contexts. Limitations of the present paper—its conceptual rather than empirical status, the focus on consultation with Thai practitioners, and the need for context-specific adaptation—define a clear empirical research agenda. Within that agenda, the framework offers researchers, practitioners, and policy actors a shared vocabulary for designing, evaluating, and comparing efforts to empower older adults in digital society.

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### **Conflict of Interest**

The author has declared that no competing interests exist.

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### **Ethics Statement**

This research did not require IRB approval because it is a conceptual paper that did not involve the collection of personal or sensitive data from human participants; expert focus-group consultations for framework validation were conducted in accordance with the author's institutional ethical guidelines.

### **Data Access Statement**

Research data supporting this publication are available upon request to the corresponding author.

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