Supplementary Table S2. Characteristics of all studies included in the review (n = 47).

Author (Year)	Country	Sample	Study Design	Platform / ICT context	Key Findings	ICT / HCI / Usability aspects	Digital barriers / facilitators
Byrne et al. (2021) [23]	United States	4,315 adults aged ≥50	Cross-sectional secondary data analysis	Social technology use (e.g., Facebook, Skype, social media communication)	Social technology use associated with loneliness; relationship differed by rurality and race and was mediated by social engagement and contact frequency	No HCI/usability evaluation. Technology use operationalized as frequency of social technology use; no interface-level or usability analysis conducted.	Facilitators: social engagement, frequent contact; Barriers: lower use among rural older adults; no usability barriers examined
Cotten et al. (2022) [63]	Not specified	Not applicable	Narrative review	Social media use (SNS, online communication)	Social media use among older adults is associated with both positive (social connection, reduced loneliness) and negative (stress, adverse experiences) well-being outcomes.	No HCI/usability evaluation. Conceptual narrative discussion of social media use; no empirical usability, interface, or HCI analysis.	Facilitators: social connection, engagement, social support; Barriers/risks: digital stress, information overload, adverse online experiences.
Yang et al. (2021) [21]	China	221 60+	Cross-sectional field	Social media use (active vs. passive)	Active use was associated with lower loneliness; associations were mediated by online	No HCI/usability evaluation. Active and passive social	Facilitators: active use, online social support, social

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			survey; structural equation modeling		social support and social presence.	media use measured via activity and perception scales; no interface-level or usability analysis conducted.	presence; Barriers/risks: upward social comparison.
Casanova et al. (2021) [33]	Italy	39 80+	Qualitative post-intervention interviews	Social networking sites (e.g., Facebook, WhatsApp)	SNS mainly used to contact family/friends; perceived potential to reduce loneliness; some found online contact less useful	Qualitative experiential usability discussion. User experiences with SNS explored through post-intervention interviews; no formal interface-level or structured usability evaluation.	Facilitators: social contact with family/friends, intergenerational interaction; Barriers/risks: privacy concerns, technical difficulties, rare use/non-use
Fu & Xie (2021) [54]	China	CGSS 2017 nationally representative sample (older adults, 60+)	Cross-sectional secondary data analysis	Social media use / Internet use	Social media use positively associated with self-rated health; associations stronger for mental than physical health.	No HCI/usability evaluation. Social media and Internet use operationalized at the behavioral level; no interface-level, usability, or design-focused analysis conducted.	Facilitators: social media use associated with better mental health outcomes; Barriers/risks: not explicitly examined.
Sinclair & Grieve (2017) [48]	Australia	Older Facebook users (55–81 years)	Cross-sectional survey; exploratory	Facebook use	Facebook social connectedness emerged as a distinct	No HCI/usability evaluation. Facebook use operationalized through	Facilitators: Facebook-derived social connectedness

			factor analysis		online connectedness construct; levels were similar to those in younger samples.	frequency measures; no interface-level, usability, or HCI-focused analysis conducted.	and social capital; Barriers/risks: not explicitly examined
Schroeder et al. (2023) [9]	Australia; Germany	Non specified	Systematic mapping review	Broad "digital technologies" (everyday + remote/assistive; multiple subtypes)	119 factors; 6 themes (Demographics/Health; Emotional; Knowledge/Perception; Motivation; Social; Functional features). 68% studies used no acceptance model; quantitative designs most common.	Self-reported usability perceptions / acceptance-based analysis. Usability conceptualized as an acceptance-related factor (e.g., perceived ease of use, usefulness, accessibility, system quality); no direct interface-level or experimental UI evaluation.	Barriers: health limitations, anxiety/fear/resistance, low knowledge/literacy, privacy/risk/trust concerns, cost. Facilitators: training/experience, self-efficacy, social support, perceived usefulness/ease, good accessibility/usability & quality.
Kouvonen et al. (2021) [22]	Finland	CHARM; N=1082, ≥50 (mean 63.2)	Cross-sectional, weighted survey; logistic regression	Digital information technology use: daily internet, smartphone, messaging/calls, social media, health info, personal health data	Poor SRH + depressive symptoms predict lower Digital information technology use (daily internet and smartphone); depression → less social media; poor SRH → less messaging/calls.	No HCI/usability evaluation. Digital information technology use measured at the behavioral access/use level; no interface-level, usability, or design-related measures included.	Barriers: poor SRH, depressive symptoms, older age, low SES/language integration. Facilitators: better health, higher education/integration, younger age group.

Pera et al. (2020) [59]	Italy; United Kingdom	4 focus groups (2 Italy, 2 UK; 6–12/group) + 16 in-depth interviews (8 Italy, 8 UK); participants >60; active photo-sharers	Two-stage qualitative study; thematic analysis	Photo-sharing on social media (Facebook, WhatsApp)	Photo-sharing associated with enhanced subjective well-being across Ryff's dimensions; supports social bonding and construction of the digital self; may also strain relationships.	Qualitative experiential usability discussion. User experiences with photo-sharing platforms explored through focus groups and interviews; no formal interface-level or structured usability evaluation.	Facilitators: family and friend connection, private/interest groups, skill development. Barriers/risks: learning difficulties, privacy and control concerns, perceived reduction of face-to-face interaction
Heo et al. (2015) [57]	United States	5,203 older adults (≥65)	Cross-sectional secondary data analysis; SEM	General Internet use	Higher Internet use associated with greater social support, lower loneliness, higher life satisfaction, and better psychological well-being	No HCI/usability evaluation. Internet use operationalized through frequency measures; no interface-level, usability, or design-focused analysis conducted.	Facilitators: social support, reduced loneliness; Barriers/risks: not explicitly examined
Czaja et al. (2006) [38]	United States	N=1,204 adults (18–91 yrs); older group: 60–91 yrs	Cross-sectional; surveys + cognitive tests; regression & SEM	Everyday technologies, computers, Internet.	Older adults (≈65+) showed significantly lower technology, computer and Internet use; age effects partly mediated by cognitive abilities, computer anxiety and self-efficacy	No formal usability testing; findings linked to interface design, cognitive load, and ease of use.	Barriers: computer anxiety, low computer self-efficacy, lower cognitive abilities. Facilitators: higher self-efficacy and prior technology experience.

Heart & Kalderon (2013) [39]	United States & Israel	N=123 older adults	Cross-sectional survey; face-to-face interviews; TPB-based questionnaires; SPSS analysis	General technology and health-related ICT (computer use)	Older adults showed limited readiness to adopt health-related ICT; ICT use associated with access and support, age, education, marital status, and health; health moderated age effects; perceived behavioral control predicted intention to use.	Design implications (discussion-level). No direct interface-evaluation; findings imply need for simple systems, clear usefulness, and strong training support.	Barriers: poor health, low perceived need/interest, limited access/support, low PBC. Facilitators: better health, access to computers and support, perceived usefulness, training.
Gell et al. (2015) [40]	United States	N=7,609 community-dwelling adults ≥65 yrs (Medicare beneficiaries)	Cross-sectional secondary analysis of NHATS 2011	Internet, e-mail, text messaging	40% used e-mail/texts; 42.7% used Internet; use higher among younger-old, male, White, married, higher-educated; use decreased with greater disability and physical limitations.	No HCI/usability evaluation. Internet, e-mail, and text messaging use measured at the behavioral access/use level; no interface-level, usability, or design-focused analysis conducted.	Barriers: physical disability, activity limitations, vision impairment, memory limitations. Facilitators: younger age (within 65+), higher education, better health/functioning, lower disability severity.
Sum et al. (2008) [56]	Australia	222 older adults (≥55)	Cross-sectional survey	Internet use (email and online communication)	Email-based Internet communication was associated with lower loneliness, whereas general Internet use showed weaker or no association.	No HCI/usability evaluation. Internet use operationalized through frequency and type-of-use measures; no interface-level, usability, or HCI-focused analysis conducted.	Facilitators: email communication, perceived social support; Barriers/risks: not explicitly examined

Zhao et al. (2021) [50]	China	244 trailing parents (older migrants)	Cross-sectional survey; mediation analysis	Mobile social media use	Mobile social media use was positively associated with life satisfaction; effects were mediated by bonding and bridging social capital and social integration	No HCI/usability evaluation. Mobile social media use operationalized through frequency and engagement measures; no interface-level, usability, or HCI-focused analysis conducted.	Facilitators: bonding social capital, bridging social capital, social integration; Barriers/risks: not explicitly examined
Minagawa & Saito (2014) [53]	Japan	Older adults (national survey sample) 65+	Cross-sectional quantitative analysis	Cell phone use	Cell phone use was associated with fewer depressive symptoms among older adults.	No HCI/usability evaluation. Cell phone use operationalized through frequency measures; no interface-level, usability, or HCI-focused analysis conducted.	Facilitators: mobile phone use, social contact; Barriers/risks: not explicitly examined.
Chen et al. (2025) [60]	China	N = 9,415 participants from CHARLS;	Longitudinal cohort study (2011–2020)	Internet use as part of social participation (combined with stock investment)	Patterns combining Internet use and social interaction associated with lower risk of new-onset depression and adverse depressive trajectories	No HCI/usability evaluation. Internet use measured as a self-reported activity within broader social participation measures; no usability, interface, or HCI-focused analysis.	Facilitators: combined Internet use and social interaction; barriers: low Internet use prevalence in the cohort

Guo et al. (2025) [61]	China	CHARLS panel data; adults aged ≥45 years (76,876 person-wave observations)	Longitudinal panel study; 2-stage instrumental variable regression with fixed effects	General Internet use (binary; frequency in robustness analyses)	Internet use causally associated with lower depression levels (≈1.41% reduction); effects mediated by social interaction, physical activity, intergenerational contact, and education	No HCI/usability evaluation. Internet use measured via self-report (binary and frequency measures); no usability, interface, or HCI-focused analysis.	Facilitators: enhanced social interaction, physical activity, intergenerational contact, education; barriers: weaker effects in rural and less-developed regions.
Rylands & Van Belle (2017) [58]	South Africa (Cape Town)	N = 59 senior citizens (≥60 years)	Cross-sectional survey (anonymous questionnaire)	Facebook (SNS); use measured via features used and functions (what Facebook is used for)	Light Facebook use and limited feature use; primarily used to stay connected with friends/family; authors report evidence supporting a (perceived) causal relationship between Facebook use and QoL.	No HCI/usability evaluation. Facebook use measured via self-reported feature use and QoL scales; no usability, interface, or HCI-focused analysis.	Facilitators: family influence and social connectedness motivations associated with Facebook adoption. Barriers: spamming/false advertising and complex privacy/security settings; cost and design/layout not reported as major obstacles.
Namkee G. Choi & Diana M. DiNitto (2013) [42]	United States	Homebound, low-income HDM; N=980; 78% ≥60	Survey + regressions	General Internet use; eHealth literacy; attitudes toward computer/Internet use	Internet use was very low, especially among ≥60 (16.8%). Nonuse and discontinuation were mainly due to cost and disability. Never-use was associated with older age, Black/Hispanic ethnicity, and lower income. Among users, older age and lower use frequency predicted lower	Self-reported usability perceptions. Ease of information search, perceived computer/Internet efficacy, and physical/functional usability difficulties assessed through	Barriers: financial cost, disability-related limitations, older age, low income, minority status. Facilitators: higher frequency of use linked to better eHealth literacy; higher income and living alone linked to higher perceived efficacy.

					eHealth literacy; in older adults, depression diagnosis was associated with lower eHealth literacy.	self-report; no formal interface-level usability evaluation.	
Sheldon et al. (2021) [62]	United States	Baby Boomers & Traditionalists; N=414; 50–91	Cross-sectional online survey; factor analysis and regression	Facebook and Instagram; social media use; uses and gratifications framework	Older adults used Facebook mainly for diversion and entertainment and Instagram mainly for relationship surveillance and documentation. Lower life satisfaction and reduced interpersonal interaction predicted higher use for companionship and diversion, supporting social compensation.	No HCI/usability evaluation. Motives of use and gratification patterns assessed; no usability, interface, or HCI-focused analysis.	Barriers: higher life satisfaction and richer offline social interaction reduced SNS reliance. Facilitators: lower social activity and lower life satisfaction increased compensatory SNS use.
Vogel et al. (2021) [51]	Germany (two urban neighborhoods)	Platform users: 136; neighbor subgroup n=92 (65+ n=36); survey n=28; interviews n=8	Mixed-methods field study: platform usage data + online survey + semi-structured interviews	Online Neighborhood Social Network (MyNeighbors)	ONSN enabled neighbor communication and supported older adults' participation in local community life; older adults were more active in consuming content and private messaging than posting; peer-support requests were rare.	Self-reported usability perceptions. Perceived ease of use, usefulness, and trust assessed via survey/interviews; no controlled usability testing.	Facilitators: local relevance, verification and privacy/trust features, support via neighborhood managers/smartphone classes. Barriers: low diffusion/liveliness (few participants/activity), lack of native mobile app (mentioned); peer-support underused due to few requests.
Han et al. (2021) [32]	Singapore	16 older adults (60–	Qualitative study; semi-structured in-	Social media apps (e.g., WhatsApp, Facebook,	Social media use perceived to support cognitive engagement, health communication,	Qualitative experiential usability discussion. Perceived	Facilitators: accessibility, ease of contact, desire to bond with family,

		80), cognitively normal, smartphone users	depth interviews; thematic analysis	YouTube) on smartphones	and social connectedness; effects depend on personal attitudes and social context.	ease of access and app affordances discussed through user experiences; no formal interface-level usability testing.	peer/family support. Barriers: perceived risks, reduced interaction quality, privacy concerns, mixed views on addiction.
Mitzner et al. (2010) [43]	United States	113 community-dwelling older adults (65–85)	Qualitative focus groups (18 groups); thematic coding of attitudes	Broad everyday technologies (home, work, healthcare ICT)	Older adults reported more positive than negative attitudes toward technology; benefits perceived to outweigh costs.	Qualitative experiential usability discussion. Attitudes toward ease of use, usefulness, features, and reliability discussed through focus groups; no formal interface-level usability testing.	Facilitators: perceived usefulness, convenience, support of daily activities, useful features. Barriers: inconvenience, unhelpful features, security and reliability concerns.
Berkowsky et al. (2015) [64]	United States	Nationally representative sample of older adults (65+); secondary analysis of survey data	Cross-sectional survey analysis; multivariate regression	Social media use (general SNS use, not platform-specific)	Significant disparities in social media use among older adults; higher use associated with younger age within old age, higher education, income, and better health; lower use among the oldest-old and socioeconomically disadvantaged groups.	No HCI/usability evaluation. Social media use measured via self-report; no usability, interface, or HCI-focused analysis.	Barriers/facilitators: not directly examined; analysis identifies sociodemographic factors associated with social media use.

He et al. (2020) [1]	China	N = 1,399 older adults aged 55+	Cross-sectional quantitative study; face-to-face interviews; block-wise OLS regression analyses	Conventional media (TV, radio, newspapers); digital access (PCs, smartphones, tablets.); social media use and online activities	Conventional media use, digital access, and social media engagement are positively associated with both informal and formal social participation; age moderates the relationship between digital access and informal participation, especially for smartphone and tablet access.	No HCI/usability evaluation. ICT use examined at the access and usage level; no usability, interface, or HCI-focused analysis, despite differentiation by device type.	Facilitators: access to digital devices, social media engagement, conventional media exposure. Barriers (implicit): increasing age reduces the strength of digital access effects on informal social participation.
Vaportzis et al. (2017) [46]	United Kingdom	18 older adults (65–76), tablet novices	Qualitative focus groups (3); brief hands-on exposure; thematic analysis.	Tablet computers (touchscreen)	Mostly positive impressions; interest in future tablet use; tablets valued for information access, but mixed feelings about technology	Qualitative experiential usability discussion. Usability discussed through first impressions and interaction experiences (e.g., size/weight, touch sensitivity, buttons/labels, need for clear manuals); no formal interface-level usability testing.	Facilitators: perceived usefulness, portability/versatility, clear screen, willingness to learn, support/training. Barriers: lack/unclear instructions, low confidence/knowledge, health limits (vision/arthritis), touch sensitivity/small controls, complexity, cost, security fears, reduced social interaction concerns.
Reid et al. (2024) [4]	Australia	N = 706 older adults (predominantly 65+)	Cross-sectional quantitative study	General ICT use (multiple devices and applications); focus on ICT adoption and engagement rather than a single technology	ICT-related anxiety is increased by subjective norms (perceived social pressure) and perceived risks; anxiety is reduced by positive attitudes	Self-reported usability perceptions. Perceived ease of use and perceived usefulness assessed	Barriers: perceived ICT risks, social pressure to engage (subjective norms), low digital competencies. Facilitators: higher digital

					toward ICT and by having sufficient technical and cognitive resources; digital competencies strongly reduce perceived risk and indirectly lower anxiety.	through survey measures; no direct interface-level usability evaluation.	competencies, perceived ease of use and usefulness, positive attitudes toward ICT, availability of personal resources (knowledge, skills, finances).
Tsai et al. (2024) [73]	Not specified	13 studies; n(total)=19,551; mean age range 58–80; inclusion mean age ≥55	Systematic review of quantitative + qualitative + mixed-method studies + meta-analysis	Digital interventions for healthy ageing and cognitive health (information, assistive, and communication technologies)	Digital interventions showed no significant pooled effects on health knowledge translation to healthy behaviour or on cardiovascular risk reduction and care dependency. However, long-term use of digital devices and computer-based physical activity programs was associated with preservation of cognitive function in older adults.	Design implications (discussion-level). Usability and person-centred design discussed through thematic synthesis; no formal interface-level usability evaluation.	Barriers included limited digital competency, advanced age, privacy and cost concerns, and fears of reduced human contact. Facilitators included person-centred approaches, flexibility of digital programs, human support, and sustained engagement with digital devices
Beneito-Montagut et al. (2022) [35]	Canada; Netherlands; Spain; Sweden	N = 430 adults aged 55–79; regular Android smartphone users; 4-week passive app tracking + online survey	Comparative quantitative study; passive smartphone tracking with exploratory cluster analysis	Smartphone use (Android); app categories (e.g., phone/messaging, SNS, news/media, finance, eGovernment)	Smartphone use patterns varied by country and some sociodemographic factors (mainly gender and education); age was not a significant differentiator within this sample; cross-national differences point to sociocultural and policy influences (e.g., eGovernment in Sweden).	No HCI/usability evaluation. Smartphone use measured through objective app-tracking and survey data; no usability, interface, or HCI-focused analysis.	Barriers/facilitators: not directly examined; cross-national differences suggest the influence of national policy and sociocultural context.

Friemel (2016) [41]	Switzerland	Representative survey (N = 1105; analytical N = 1103 due to missing data)	Cross-sectional (CATI+PAPI); logistic regression	Internet use (online vs offliner; recent use)	Use strongly lower with higher age (esp. 70+); higher odds with education, income, pre-retirement computer use, technical interest, partner status, and social-network encouragement; gender not significant after controls.	No HCI/usability evaluation. Internet use measured via self-report (online/offliner and recent use); no usability, interface, or HCI-focused analysis.	Facilitators: encouragement/support from family/friends; private learning preferred. Barriers: perceived complexity/learning effort, security/technical worries; oldest-old cite sensory/dexterity limits more.
Nymberg et al. (2019) [6]	Sweden	15 elderly patients (65–80)	Qualitative focus group interviews; thematic content analysis	E-health in primary care (e.g., PHCC online contact/website, online booking, EMR access, video consultations, SMS reminders, self-monitoring via digital tools).	Main theme: ambivalence toward e-health ("reluctant curiosity", wish to join, need for information/learning support); 8 categories describing mixed views, limited experience, and conditions for adoption.	Qualitative experiential usability discussion. Need for user-friendly systems, clear information, and learning support discussed through focus groups; no formal interface-level usability testing.	Barriers: low interest/skills/self-trust, mistrust in technology and poor healthcare IT/interoperability, fear of reduced access, costs, aging-related impairments (vision/hearing/tremor), emergency-safety concerns. Facilitators: desire to move forward, training/support (courses/family help), perceived benefits (accessibility, online booking complement, video consults in some cases, reminders, comprehensive digital medication list, lab results/EMR access).

Di Giacomo et al. (2020) [5]	Italy	N = 117 adults and older adults aged 50–67	Cross-sectional observational study	General digital technologies and computer use in daily living; focus on non–digital-native adults and older users rather than a specific platform.	Higher computer anxiety is associated with non-autonomous use, low frequency of technology use, and perceived need for help; no significant effects of gender, education, occupation, or age group were found; social use of technology is associated with better technology use and lower anxiety; technophobia emerges as a risk factor for reduced adherence to digital solutions and fragile ageing.	Self-reported usability perceptions. Usability addressed indirectly through self-perceived autonomy, confidence, and frequency of technology use; no direct interface-level usability evaluation.	Barriers: low digital autonomy; low frequency of use; perceived need for help; computer anxiety and technophobia. Facilitators: social use of technology; higher self-perceived confidence and autonomy in technology use.
Quan-Haase et al. (2016) [26]	Canada	21 digital seniors aged 60+	Qualitative interviews; grounded theory analysis	Everyday ICT use (Internet and digital media in daily routines)	Digital seniors develop new, hybrid, and digitally adapted everyday practices; ICTs complement or replace traditional practices depending on context.	No HCI/usability evaluation. Focus on ICT affordances and everyday practices; no usability, interface, or HCI-focused analysis.	Barriers: ICT use is selective and context-dependent; broader digital divide among non-connected seniors noted in the literature.
Seifert & Cotten (2020) [20]	Switzerland (Zurich)	940 long-term care residents (mean age 87.6) from 20 retirement homes.	Cross-sectional survey; quantitative analysis of ICT ownership and use.	ICT use in long-term care (TV, radio, computers, smartphones, tablets, Internet).	Low but non-negligible use of modern ICTs in long-term care (Internet 21%, smartphone 13%, tablet 5%); ICT use more likely among younger residents, those with higher education,	No HCI/usability evaluation. ICT ownership and use measured via self-report; no usability, interface, or HCI-focused analysis.	Facilitators: younger age within LTC, higher education, lower nursing-care level, interest in technology. Barriers: advanced age and higher care needs typical of long-term care residents.

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					lower care needs, and higher interest in technology.		
Loipha (2014) [29]	Thailand (Khon Kaen Municipality)	238 elderly adults (60+)	Cross-sectional survey; questionnaire-based quantitative analysis (percentages, mean, SD, Z-test, Chi-square)	General Internet use	Very low Internet use among Thai elderly; use declines sharply with age (70+); users mainly use Internet briefly at home for entertainment/information	No HCI/usability evaluation. Internet use measured via self-report; no usability, interface, or HCI-focused analysis.	Barriers: limited digital skills, visual strain, lack of devices, low prior experience. Facilitators: prior Internet experience, basic operational skills, willingness to learn, perceived usefulness, reasonable service cost, and family encouragement.
Ractham & Techatassanasoontorn (2014) [28]	Thailand	341 senior citizens (60+)	Mixed-methods: focus groups (Q-sorting item development) + cross-sectional survey; PLS-SEM	Social media use	Satisfaction derived from social media use positively influences domain-specific and overall life satisfaction; five domains (community, consumer, family, health, work) show significant positive effects	No HCI/usability evaluation. Social media use and satisfaction measured via self-report; no usability, interface, or HCI-focused analysis.	Not directly examined; study focuses on satisfaction with social media use across life domains rather than barriers or facilitators.
Hutto et al. (2015) [49]	United States	Older adults 50+ (final N=141; Facebook users vs non-users)	Cross-sectional survey; group comparisons and regression analyses	Facebook (SNS)	Facebook users reported higher social role satisfaction than non-users; directed SNS communication associated with lower loneliness and higher social role satisfaction; SNS use did not replace traditional communication	No HCI/usability evaluation. Facebook use and psychosocial outcomes measured via validated self-report scales; no usability, interface, or HCI-focused analysis.	Barriers: lack of access/interest, privacy and security concerns, perceived complexity. Facilitators: higher technology confidence, positive ICT attitudes, directed SNS communication

Tsai et al. (2017) [44]	United States	21 older adults (65+), tablet owners	Qualitative semi-structured interviews; thematic analysis (grounded-theory approach)	Tablet computers	Social support and self-directed "playing around" enabled learning and everyday tablet use	Qualitative experiential usability discussion. Self-reported ease of use and device affordances discussed through interviews; no formal interface-level usability testing.	Facilitators: family/professional support, encouragement to explore, learning at own pace, adjustable/portable tablets. Barriers: touchscreen sensitivity and fine-motor difficulties, need for slow-paced instruction, initial hesitation due to cost or prior computer frustration.
Cornejo et al. (2013) [52]	Mexico	30 older adults and family members (household-based study)	Design and field evaluation of an ambient social networking system; long-term in-home deployment (21 weeks) with qualitative analysis (interviews, observations)	Ambient social networking system (Tlatoque; Facebook-linked display).	Ambient access to family-shared SNS content enriched conversations and catalyzed in-person and phone-based family interactions.	Design-oriented usability discussion. Usability addressed through design-for-adoption principles (ambient display, minimal interaction) and long-term field deployment; no formal interface-level usability testing.	Facilitators: ambient, low-effort access to SNS content; integration into domestic space; family-shared content. Barriers: low baseline SNS participation among older adults; reliance on relatives' SNS activity.
Nan et al. (2023) [65]	China	CFPS 2020; older adults ≥60; N=4,714	Cross-sectional secondary data analysis	General Internet use (mobile/computer); specific uses: WeChat, video	Internet use associated with lower depression; interpersonal relationship partially mediates the association; WeChat chatting, video	No HCI/usability evaluation. Internet use measured via self-report (binary	Facilitators: Internet use (WeChat, video browsing, online shopping); better interpersonal relationships;

				browsing, online shopping, games, online learning	browsing, and online shopping linked to lower depression; effects significant for urban and male older adults	and specific activities); no usability, interface, or HCI-focused analysis.	urban context. Barriers/limits: no significant effects for rural subgroup; online games and online learning not associated with reduced depression.
Nef et al. (2013) [8]	Not applicable (systematic review)	18 studies included (older adults ≥55)	Systematic review (database search, screening, qualitative synthesis)	Social networking sites / social media	SNS use primarily supports intergenerational communication with younger family members; potential to enhance social participation, especially for older adults with limited mobility.	Design implications (review-level). Age-related design requirements and limitations of SNS/Web design discussed through qualitative synthesis; no formal interface-level usability evaluation.	Barriers: privacy concerns, technical difficulties, age-inappropriate SNS/Web design. Facilitators: motivation to stay connected with children and grandchildren.
Gomez-Hernandez et al. (2023) [10]	Not specified	Systematic review of 40 primary studies (2010–2021) involving adults aged ≥60, all including usability tests.	Systematic literature review + thematic analysis	Mobile applications on smartphones, tablets, and smartwatches.	Identified 27 evidence-based design guidelines for mobile apps for older adults, including 2 core principles (simplification; increased size and spacing of controls) and guidelines across Help & Training, Navigation, Visual Design, Cognitive Load, and Interaction.	Empirical usability testing (review-level synthesis). Only studies including empirical usability testing were analyzed; design guidelines derived from ob-	Facilitators: simplified interfaces, larger targets, clear navigation, training/support, readable text, clear feedback. Barriers: cognitive load, small targets, complex gestures, low contrast, unclear feedback.

						served usability issues and user performance.	
Leist (2013) [31]	Not specified	Not applicable	Mini-review / narrative review of gerontological literature (July–August 2012)	Social media (online social networks, online communities, discussion forums).	Social media may support social relationships in later life; online communities can provide social support and help reduce loneliness, stress, and increase perceived control and self-efficacy; potential value for health-related knowledge dissemination.	No HCI/usability evaluation. Narrative review does not address interface design, usability testing, or HCI-focused analysis.	Facilitators: functional capacity, ICT-related knowledge, positive attitudes toward social media; access to online communities. Barriers/risks: misuse of personal data; dissemination and uncritical adoption of potentially harmful information.
Zhang (2023) [7]	Multiple countries (25 regions covered)	Systematic review of 83 empirical studies on older adults	Systematic literature review	Emerging digital technologies (ICTs, social media, assistive tech, robots, mHealth, smart homes)	Older adults' attitudes toward technology are shaped by personal characteristics, technology-related factors, and social context; older adults are framed as users, actors, and potential co-designers.	Self-reported usability perceptions (review-level). Synthesizes perceived ease of use and usability as determinants of technology adoption; no formal interface-level usability evaluation.	Facilitators: perceived usefulness, ease of use, support and training, affordability. Barriers: access and cost, technology anxiety, privacy concerns, stigma, complexity.
Haris et al. (2014) [34]	Malaysia	3 older adults (age 59, 62, 66)	Netnography: 3-month participant-observation	Facebook (social media)	Facebook use supported 7 QoL components (relationships, emotional well-being,	No HCI/usability evaluation. Qualitative netnographic	Facilitators: connectivity, emotional support, info access (religion/health), au-

			on Facebook + FB chat/message interviews + archival posts + field notes; inductive coding guided by 7 QoL components.	religion/spirituality, autonomy, social/leisure, standard of living/finance, health info access).	analysis of Facebook use; no usability, interface, or HCI-focused analysis.	tonomy of expression, leisure, marketing/advertising for income. Barriers: not explicitly analyzed as digital/usability barriers (paper mostly frames loneliness/isolation as context).
Cotten et al. (2013) [47]	United States	205 older adults (assisted and independent living communities)	Cross-sectional survey; regression analysis	General Internet use	More frequent Internet use associated with lower loneliness and greater contact with friends and family; no association with perceived social isolation	No HCI/usability evaluation. Internet use measured as frequency of use; no usability, interface, or HCI-focused analysis.	Facilitators: increased communication and social contact. Barriers/risks: not explicitly examined