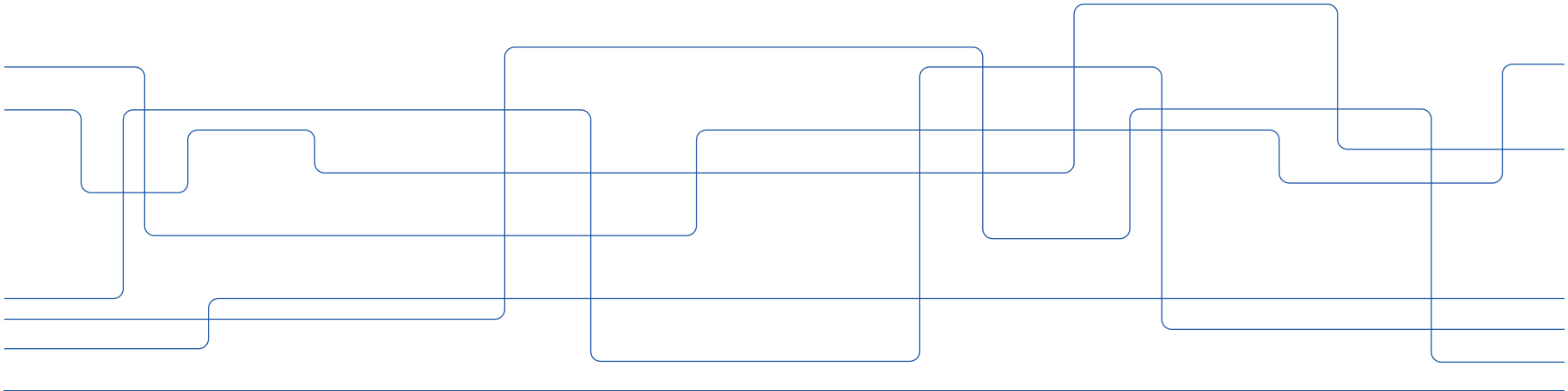




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Digital technology use for home care: User perspective

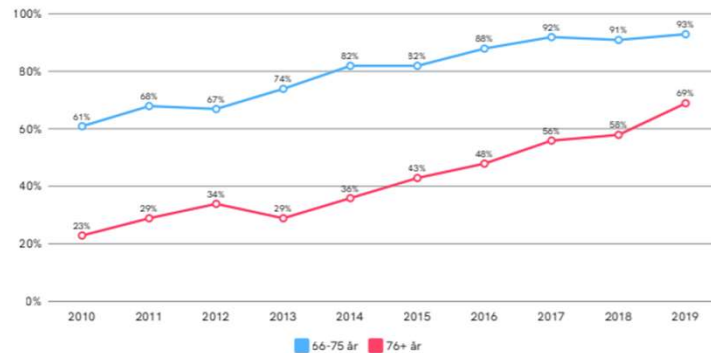
Sanna Kuoppamäki, Assistant Professor, Biomedical Engineering and Health Systems, KTH



Age, life stage and digital technology use

De äldsta börjar komma ikapp i internetanvändandet

Diagram 1.5 Andel av befolkningen (66+ år), Använder internet, år 2010-2019



Internetstiftelsen(2019): Svenskarna och Internet



Chronological age

Physical, socio-emotional and cognitive changes associated with ageing



Life course stage

Life transitions and changes in social and personal relationships transform



Generational experiences

Technology users' media identity that develops during young adulthood years

Factors influencing digital technology use

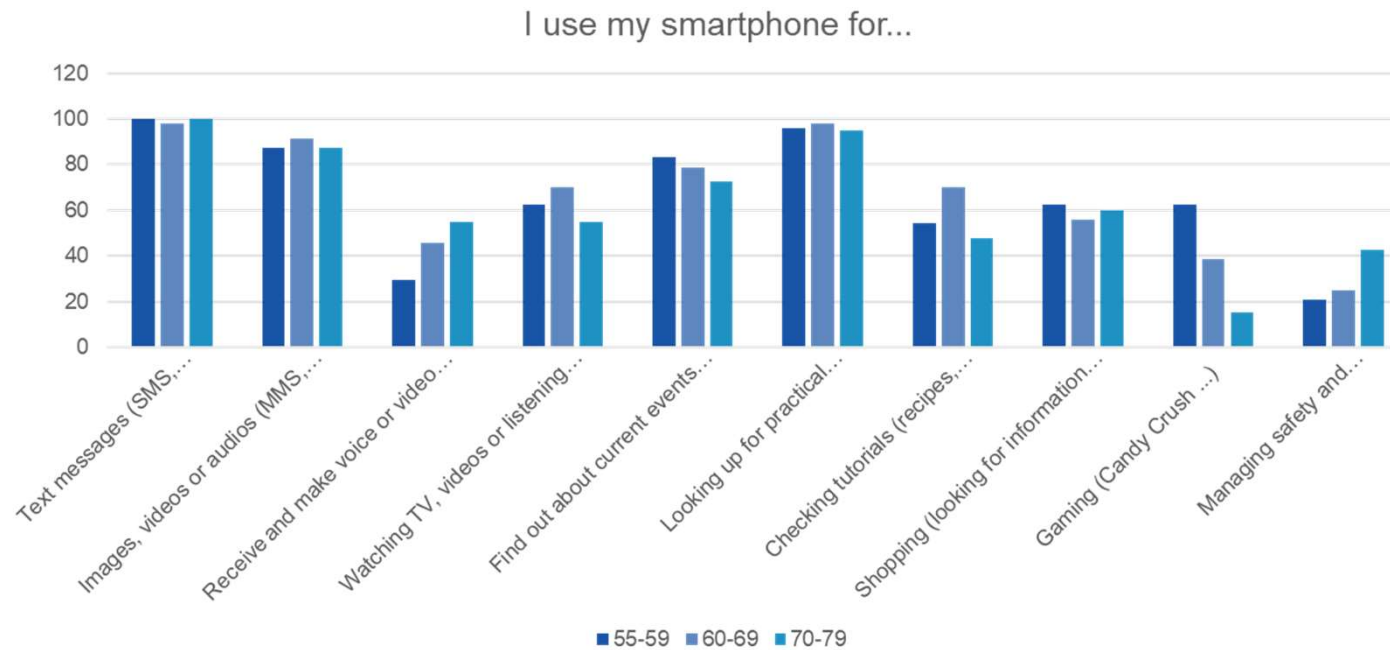


Personal factors	Socio-demographic factors	Socio-economic factors
Attitudes towards technology	Financial resources	Corporate processes
Perceived usefulness and ease-of-use	Cultural resources	Macro-economic changes
Cognitive abilities	Education level	Availability
Digital literacy and skills	Social relationships and networks	Accessibility
Self-efficacy	Household structure	Ownership

Kuoppamäki, S. (2018). The role of age and life course stage in digital consumption. University of Jyväskylä, Finland.

Digital technology use among older adults

Survey for 55-79 year-old smartphone users in 2019 in Sweden (N=121)





Digital technology use for social connectedness

Exploratory factor analysis (EFA) and General Linear Model (GLM)

Connectedness with personal relationships*

- + Finding out about current events
- + Looking up for practical information

Connectedness with community**

- + Text messages and WhatsApp
- + Images, videos and Audio
- ++ Watching, TV, video
- ++ Findings out about events
- ++ Looking up for practical information

Connectedness with society***

- + Looking up for practical information

- Smartphone use is positively associated with connectedness with community, and less associated with connectedness with personal relationships and society.
- Older adults who use their smartphone in a more versatile way report more social activities with community than respondents with less versatile digital activity.

* Contacts with friends and family

**Having social activities, Attending events, Sharing information

*** Attending voluntary activities

Kitchen technologies and independent living

- Cooking is a skill that consists of combining, mixing, processing and handling ingredients
- Technological systems for instructional guidance: 'Cooking Navi'[1], 'Smart VideoCooking'[2], MimiCook'[3] 'Shadow Cooking' [4]
- Representational modalities for giving feedback on cooking: computer-enhanced cooking pans[5], sensors to detect thermal information[6], or monitor the skill level of the cook [7]
- Technological systems for social and experiential aspects of cooking: 'Living CookBook'[8], 'SmartKitchen' [9], 'Talking Bottle' [10]
- Adapting these systems in real-life is difficult: they are perceived invasive, distracting and difficult to use





Digital Kitchen and ageing-in-place

- Cooking is meaningful for older adults' ability to live in their own home, for connections, security and familiarity
- Age-related physical, cognitive and social changes may affect personal interests, needs, capabilities to cook a meal in a healthy and functional way
- 'Ambient Assisted Living Applications' [12]:
- 'Smart Kitchen' for persons with cognitive impairments [13]: Communal cooking with residents and their instructors in sheltered living facilities
- 'Messaging Kettle'[13]: Sharing the experience of cooking together through distance



Physical interaction with kitchen tools

1. Cutting and chopping



2. Opening the packages





2. Organisation and coordination of tasks

2.1 Switching and synchronising tasks



2.2 Monitoring tasks





Designing assistance in the kitchen

	Cooking task	Type of intervention
<i>Operational assistance</i>	Cutting and chopping	Provision of physical strength and dexterity
	Opening the packages	Maintenance, availability and selection of tools Assessment of abilities and difficulties
<i>Instructional assistance</i>	Switching between and synchronising tasks	Suggestion of alternative actions Coordination and temporal alignment of two simultaneous tasks
	Monitoring tasks	Tracking location of objects and their movements Tracking different tasks and their progression



Design propositions for assistive technologies

To support older adults' independent living, digital kitchen technologies should...



- Provide support in the maintenance, availability and selection of tools in a way that reinforces user's skills and competences
- Track and suggest alternative methods to perform tasks in a way that encourages user adaptability
- Suggest alternative actions and coordinate tasks in a way that it encourages user's participation
- Assess and re-assess the progression of tasks in a way that reinforces user's sense of security



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Thank you!

sannaku@kth.se