

ICT Usage and Well-Being of Japan's Older People

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As the population ages, the question of how to prevent isolation among older people and increase their well-being becomes a social issue. For older people, ICT usage does not have a large effect on enhancing well-being, but becomes sufficiently large only through the improvement of social capital. The pros and cons of such modern communication means should be utilized as a reference when considering the development of future communication means and a human coach—a person who supports the use of communication means by older people. In other words, to think about the spread of communication means to community-dwelling older people in the future, it is always necessary to think about technology usage emphasizing the relationship between older people and society.

Keywords: well-being ; ICT usage ; social capital ; older people

1. ICT Usage and Well-Being

ICT usage by the elderly improves their well-being and quality of life through a variety of channels ^[1]. For example, regular internet use may relate to health behaviors because there is various information about health on the internet ^[2]. Therefore, previous works have reported that internet use relates to better self-reported health and a lessened risk of depression and functional impairment ^{[3][4][5][6][7]}. Relatedly, other works have reported associations between internet use and greater social support, decreased loneliness, better life satisfaction, better psychological well-being, and better overall mental health ^{[8][9][10][11]}. Moreover, it has been shown that the usage of various ICT means, not limited to the Internet, is related to the well-being of older people ^{[12][13][14][15][16][17][18][19][20]}. However, some other studies have shown that there is no direct relationship between ICT usage and well-being ^{[21][22][23][24][25]}. For instance, previous studies found no significant association between SNS use and emotional well-being and related variables in older adults ^{[22][23]}. Relatedly, some research indicates no association between SNS use and loneliness ^{[21][24][25]}. These contradictory results suggest that there is a variable that mediates the relationship between ICT usage and well-being.

2. Social Capital as a Mediator

It has been found that being part of a digital community in the internet-based media allows older people to feel socially more involved with others ^[7], prevents their isolation in the society ^{[19][20]}, and improves their social capital ^{[21][26][27][28]}. For instance, Tsai et al. ^[20] found that videoconferencing chats between older people at nursing homes and family members significantly increased emotional and appraisal social support from family members and decreased the loneliness of older people. Social capital, in turn, has been shown to be associated with better self-rated health ^{[29][30][31]} ^{[32][33][34]} and well-being ^{[12][13][14][15][16][17][18]}. These indicate that social capital has a mediating role between ICT usage and well-being.

3. Previous Studies

Indeed, as is shown in **Table 1**, previous studies suggested that ICT usage enhances social capital (and related variables) and thereby enhances well-being (and related variables). Of the eight studies, four were for western ^{[8][9][35][36]}, and four were for eastern ^{[37][38][39][40]} countries. Furthermore, of these, three studies are limited to the elderly aged 60 and over ^[9] ^{[35][37]}, and the rest include those in their 50s. Of these, the study by Sum et al. is based on data from an online survey conducted in the United States. It shows that those who use the Internet for communication and information seeking tend to have higher social capital, and those with higher social capital tend to have higher well-being ^[36]. Meanwhile, an intervention study by Szabo et al. in New Zealand showed that the ICT usage aimed at connecting with friends and family enhances social engagement and indirectly enhances well-being ^[35]. Besides them, the bridging function of social capital has been shown in several studies, if not limited to older people ^{[22][41]}. For example, there is a study by Chan et al. showing that ICT usage enhances social capital and indirectly enhances well-being for a wide range of age groups in Hong Kong ^[22].

Table 1. Previous research on the mediation effect of social capital and related variables.

Country	Age	N	Method	Independent Variable	Mediator	Dependent Variable	Result	Article
New Zealand	60–77	1165	Path analysis (longitudinal)	Frequency of online activities	Loneliness and social involvement	Well-being (control, autonomy, self-realization, and pleasure)	The use of the Internet indirectly affected well-being through reduced loneliness and increased social involvement.	[35]
Australia	55 and above	222	Multiple regression analysis (cross-sectional)	The length of Internet usage	Social capital (feelings of trust and values of life)	Well-being (satisfaction with health, relationships, feeling of safety, the standard of living, achieving in life, feeling part of the community, and future security)	The use of the Internet for communication and information exploration had a positive effect on well-being through the improvement of social capital.	[36]
United States	50 and above	591	Path analysis (cross-sectional)	Whether they used ICT (e-mail, social networking sites, online video/phone calls, online chatting/instant messaging, smartphone)	Loneliness	Well-being (life satisfaction) and other mental health benefits	Using social technologies was associated with better subjective well-being and other mental health benefits, and the associations were mediated through reduced loneliness.	[8]
United States	65 and above	5203	Structural equation modeling (cross-sectional)	Frequency of Internet use	Social support and loneliness	Life satisfaction and psychological well-being	Internet use predicted higher social support, leading to lower levels of loneliness and higher levels of psychological well-being and life satisfaction.	[9]
China	60 and above	6323	Multiple regression analysis (cross-sectional)	Whether they used the Internet during the past month	Social capital (frequency of interaction with friends)	Physical and mental health	Social capital acts as a partial mediator between internet use and the physical health of the elderly.	[37]
China	50 and above	4083	Structural equation modeling (cross-sectional)	Frequency of Internet use	Loneliness and volunteering	Happiness	Internet use is indirectly associated with a high level of happiness, which is mediated by a decrease in loneliness and an increase in volunteer activity.	[38]

Country	Age	N	Method	Independent Variable	Mediator	Dependent Variable	Result	Article
South Korea	55 and above	1661	Multiple regression analysis (cross-sectional)	Internet usage, diversity, value creation	Social capital (on–offline relationship)	Life satisfaction	Social capital acts as an intermediary between the level of digital information usage and life satisfaction.	[39]
South Korea	50 and above	6306	Generalized estimating equation (cross-sectional)	Whether they used the Internet in a year	Social relationship satisfaction	Depression	Internet use was related to increased satisfaction with social relationships, which, in turn, was associated with decreased levels of depression symptoms.	[40]

4. Covariates

Previous studies have shown that sex [42][43][44][45], age [46][47], family structure [40][48][49][50][51][52][53][54], educational background [42][43][55][56][57][58], work [59], and income level [55], etc., influence ICT usage. There is also evidence that separated or divorced people, people of lower socioeconomic status, and younger persons report more often a lower level of trust [60]; lower-income and psychosocial factors are associated with inferior health [29][61]; and social activity participation has a positive impact on older adults' physical and mental health [16][62][63][64][65][66][67][68]. Therefore, a series of these demographic variables will be used as control variables in the following analysis.

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