PSYCHOLOGY AND EDUCATION (2021) 58(4), ISSN 1553 - 6939
Article Received: 22th November,2020; Article Revised: 26th March, 2021; Article Accepted: 26th April, 2021

Development of Elderly Quality of Life towards 5G Digital Era in Bangkok Metropolitan Areas, Thailand

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ABSTRACT

The objectives of this research were to study: 1) the level of development of elderly's quality towards 5G digital era, the power of information technology, government policy, the development of social innovation and the promoting of digital awareness; 2) the influence of the power of information technology, government policy, the development of social innovation and the promoting of digital awareness on the development of elderly's quality of life towards 5G digital era; This research employed a quantitative research. In quantitative research component, the sample consisted of 380 residents in the 60-to-75 age group and was the member of the elderly club in 6 districts of Bangkok, obtained by stratified sampling. The sample size was calculated by 20 times the Empirical variables. Data were collected with the use of questionnaires and analyzed by structural equation model. The research findings indicated that: 1) the development of social innovation, the power of information technology and government policy were at the strongly high level, the development of elderly's quality of life towards 5G digital era and the promoting of digital awareness were at the high level; 2) the government policy had overall strong influence on the development of elderly's quality of life towards 5G digital era, then followed by the development of social innovation and the power of information technology, respectively; however, the promoting of digital awareness had not any influence. The findings of the research could be used by government agencies and related organizations as the key indicators and plan for the development of the elderly's quality of life in accordance with further normal happiness

Keywords
Quality of life development, elderly, 5G digital era

Introduction

The world population situation of the current society is entering an aging society as defined by the United Nations referring to the situation when the population age 60 years and over is at the proportion of more than 10 percent or having the population age 65 years for more than 7 percent. When such proportion increases to 20 percent and 14 percent, respectively, the world population situation will be the complete - aged society. Thailand has been an aging society since 2005 and will enter a complete aging society in 2023 as well as becoming the Super Aged Society in 2033 having the aging population for 28% of the total population (Office of the National Economic and Social Development Council, 2021). This will affect the economy because the proportion of the working-age population is a major production force.

At present, information technology, communication and telecommunication have developed into the 5G era to play an important role in the way of life of people. It is therefore necessary to develop information technology in conjunction with the elderly care to improve the quality of life of the elderly and reduce disparity in access to technology (Pasu Decharin, 2017). In 2017, only 4.2 percent of the elderly were given information, useful news from the internet, and social media. Therefore, the elderly need to develop their perception of information and financial transactions in order not to become the victims of fake news leading to the violation of rights and property fraud (Prawet Wasi, 2018). In addition, there must be the development to solve problems of the elderly in the future such as medical devices, communication, and smart homes. Thus, the community must be strengthened. The initiative is required to bring innovation in taking care of the elderly and developing the potential of the elderly to have skills in the use of useful tools, equipment and digital technology (Suwit Thirakot and Weerapong Polnikornkit, 2018). Due to the crisis of the Coronavirus 2019 epidemic, internet usage rates have increased. This is because people have to change their lifestyle such as working from home, online learning, online shopping. The government provides assistance such as the registration to receive aid, remedies and compensation for people affected by the coronavirus 2019 epidemic. The importance of digital technology is not only conducive to life during the epidemic but it is also an important part of the elderly lifestyle in the New Normal way (Office of the National Economic and Social Development Council, 2021). The policies are formulated for preparing to adapt to change, use technology to create jobs, good quality of life for the elderly. Human Resource Research and Development Unit in Digital Literacy and Media Literacy, Faculty of Communication Arts, Chulalongkorn University, in collaboration with the Foundation of Thai Gerontology Research and Development Institute presented two political proposals on the new lifestyle of the aging society with digital technology consisting of the basic welfare policy on technology and quality of life in the 5G aging society and the security policy for the life of the elderly with 5G technology (Foundation of Gerontology Research and Development Institute, 2020).

In this regard, Thailand has continuously transitioned to an aging society. The public and private sectors have to realize and prepare themselves for the concrete management of problems. The researchers, therefore, studied the model to prepare guidelines for the development of the quality of life of the elderly. The guidelines were adapted from the foreign guidelines accordingly such as setting the policies on the elderly as national agenda, building income

security for the elderly, adapting to the environment, community and city to suit the elderly, adjusting the population health database for the elderly and related agencies to be able to access information more conveniently, innovative development through the use of artificial intelligence for the elderly, amendment of the elderly care law in various fields, adjusting the attitude of living altogether in preparation for the aging of the elderly, promoting the community to care for the elderly at home, encouraging elderly volunteers to exchange care for one another through the Time Bank Program. This includes taking care of the rights of the elderly such as the social welfare center, pension insurance, tax measures, promotion of savings and health care system for the elderly to be healthy and to live happily, etc.

This research presents that the improvement on the quality of life of the elderly in the 5G digital age in Bangkok depends on the power of information technology, government policy, the development of social innovation and the promotion of awareness. The researchers were interested in the issue of the elderly's quality of life conceptual framework in the 5G digital age in social networks to prepare for successful entry to aging society. This includes the direction of the public health system that can support people in the aging society effectively.

Conceptual framework.

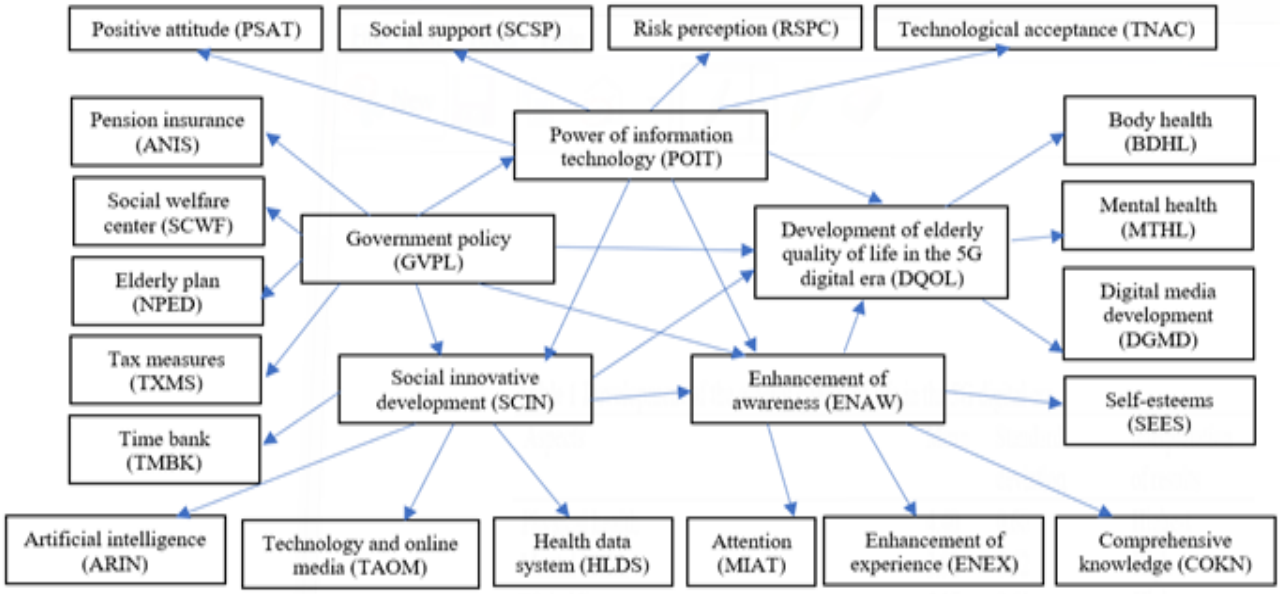


Figure 1 conceptual framework

Research methodology

This research used the mixed research both quantitative and qualitative method. The research data was gathered from documents, books, articles, research reports related to the quality development in the 5G digital era, Bangkok area

Sample population: The population used in this study consisted of people aged 60 - 75 years living in Bangkok using the statistical data on the elderly from the Department of Older Persons, December, 2019 (Department of Older Persons, 2019) for a total of 812,855 people. The sample size was specified using the criteria of 20 times the observed variables according to the Structural Equation Model (SEM) technique. The sample size was determined using the Rule of thumb method (Westland, 2010) using the Multi-stage Sampling method for a total of 380 persons, with a sampling structure from zoning according to the administration of the Bangkok Metropolitan Administration. The sampling range to the elderly was determined in each of the 6 districts; Din Daeng Elderly Club No. 4 for 48 cases, Suan Luang Elderly Club No. 37 for 59 persons, Bang Khen Elderly Club of Phahonyothin Village for 73 cases, Bueng Kum Elderly Club No. 50 for 75 cases, Bang Khae Elderly Club No. 29 for 63 cases, and Liab Klong Thaweewattana Community Elderly Club for 62 cases.

Research instruments: The instruments used in this study consisted of questionnaires and interview forms verified by 5 experts. The results of the questionnaires revealed that the criteria-passed IOC value (i.e. greater than 0.50) was 100 items and 6 items were not passed. The researchers had corrected and tested again. The Cronbach's Alpha Coefficient or the reliability passed the criteria for 0.804. The questions were covered following the objectives. Regarding the interview form, the interviewees understood the questions.

Analysis of quantitative data: The descriptive statistics were used for explaining general characteristics of the sample group and analyzed the current condition of the development of the elderly quality of life in the 5G digital era, Bangkok area, the access to technology, the behaviors of media use, the attitudes towards the use of online social network, and the readiness of the elderly society. The statistics used in the research were frequency, mean, percentage, and standard deviation. For the mean interpretation criteria, the researchers chose to use the criterion for class equaling to 0.80 of (Gleim, 2003). The inferential statistics were used to test the hypothesis of the development of the elderly quality of life in the 5G digital era, Bangkok area, by analyzing structural equation models to test the relationship between the latent and observable variables, and the independent and dependent variables. This

was for finding the influence of the power of information technology, government policy, development of social innovation, and promotion of awareness affecting the development of quality of life of the elderly in the 5G digital age in Bangkok area.

Research results

The levels and factors affecting the elderly quality of life in the 5G digital era as shown in Table 1 revealed that the development of the elderly quality of life in the 5G digital era was entirely at the high level (mean = 4.16). When considering each aspect, it was found to be in the physical health (mean = 4.40), followed by the digital literacy (mean = 4.17), and the mental health (mean = 3.92), respectively.

Table 1 Development of the elderly quality of life in the 5G digital era

Aspects	Mean	Standard deviation	Interpretation of results
Physical health	4.40	0.60	Highest
Mental health	3.92	0.62	High
Digital literacy	4.17	0.61	High
Overall	4.16	0.51	High

The level of power of information technology included positive attitude creation, social support, risk perception, and technology acceptance. These were the indicators of the power of information technology used in this study. The details were as shown in Table 2. The power of information technology was entirely at the highest level (mean = 4.25). When considering each aspect, it was found to be at the highest level in 3 aspects and to be at the high level in 1 aspect. The elderly had the opinion that the power of information technology in the risk perception was at the highest level (mean = 4.31), followed by technology acceptance (mean = 4.30), positive

Table 2 Power of information technology

Aspects	Mean	Standard deviation	Interpretation of results
Positive attitude creation	4.24	0.68	Highest
Social support	4.16	0.67	High
Risk perception	4.31	0.60	Highest
Technology acceptance	4.30	0.59	Highest
Overall	4.25	0.59	Highest

The level of government policy included the pension insurance, social welfare center, elderly plan, and use of tax measures. These were the indicators of government policy used in this study. The details were as shown in Table 3. The government policy was entirely at the highest level (mean = 4.22). When considering each aspect, it was found to be at the highest level in 2 aspects and to be at the high level in 2 aspects. The elderly had the opinion that the government policy in the pension insurance was at the highest level (mean = 4.26), followed by social welfare center (mean = 4.25), elderly plan (mean = 4.20), and use of tax measures (mean = 4.18), respectively.

Table 3 Government policy

Aspects	Mean	Standard deviation	Interpretation of results
Pension insurance	4.26	0.63	Highest
Social welfare center	4.25	0.66	Highest
Elderly plan	4.20	0.67	High
Use of tax measures	4.18	0.74	High
Overall	4.22	0.63	Highest

The level of development of social innovation included the time bank, use of artificial intelligence, use of technology and online media, and preparation of health data system. These were the indicators of development of social innovation used in this study. The details were as shown in Table 4. The development of social innovation was entirely at the highest level (mean = 4.34). attitude creation (mean = 4.24) and social support (mean = 4.16), respectively.
When considering each aspect, it was found to be at the highest level in all aspects (mean = 4.41),followed by time bank (mean = 4.36), preparation of health data system (mean = 4.30), and use of artificial intelligence (mean =4.28), respectively.

Table 4 Development of social innovation

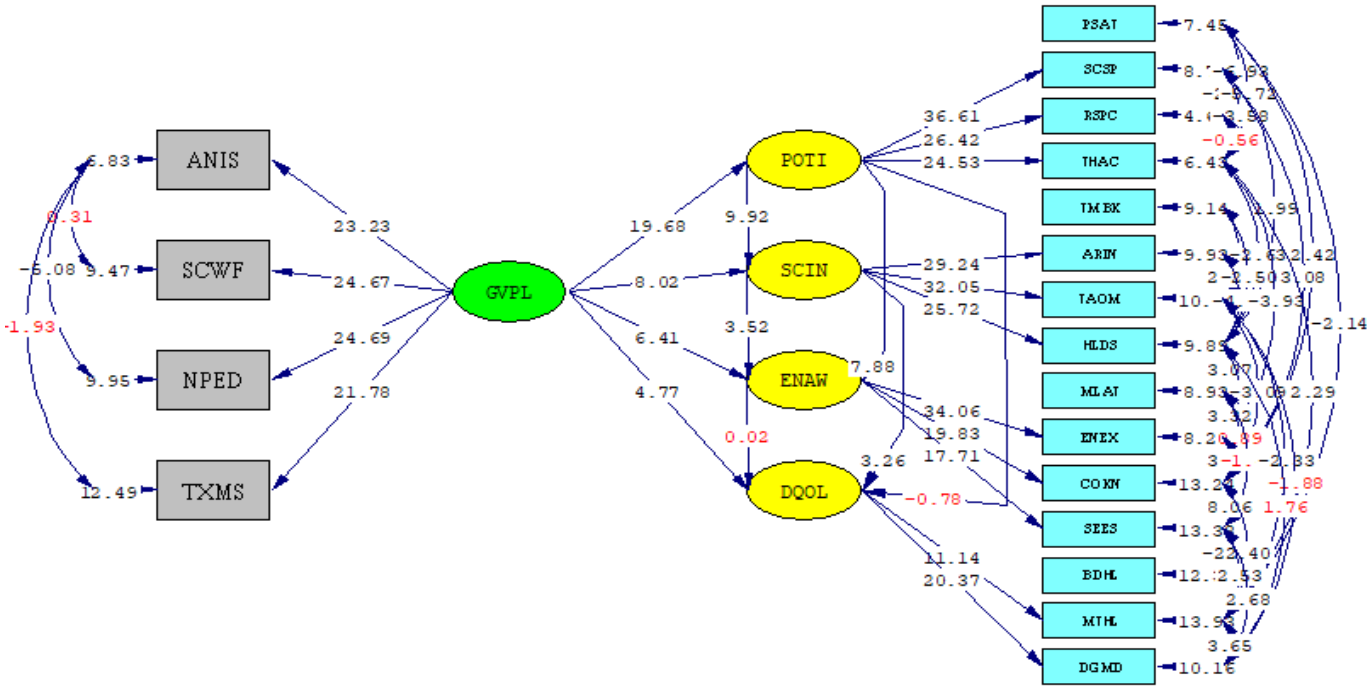
Aspects	Mean	Standard deviation	Interpretation of results
Time bank	4.36	0.57	Highest
Use of artificial intelligence	4.28	0.58	Highest
Use of technology and online media	4.41	0.57	Highest
Preparation of health data system	4.30	0.60	Highest
Overall	4.34	0.53	Highest

The level of awareness enhancement included the empathy, enhancement of life experience, cognition, and self-esteem. These were the indicators of awareness enhancement used in this study. The details were as shown in Table 5. The awareness enhancement was entirely at the high level (mean = 4.09). When considering each aspect, it was found to be at the highest level in all aspects; in the empathy (mean = 4.20) and enhancement of life experience (mean = 4.20), followed by self-esteem (mean =4.00) and cognition (mean =3.97), respectively.

Table 5 Awareness enhancement

Aspects	Mean	Standard deviation	Interpretation of results
Empathy	4.20	0.68	High
Enhancement of life experience	4.20	0.66	High
Cognition	3.97	0.58	High
Self-esteem	4.00	0.59	High
Overall	4.09	0.56	High

Regarding the analysis on the relationship among the variables, the researchers had presented it as the structural model in the t-value format as shown in Figure 1



Chi-Square=105.02, df=88, P-value=0.10417, RMSEA=0.022

The analysis results revealed that the development of the elderly quality of life in the 5G digital era depended on government policy and social innovation development. It could explain the relatively high variation in the development of the elderly quality of life in the 5G digital era while the power of information technology and awareness enhancement had no direct effect on the development of the elderly quality of life in the 5G digital age. The awareness enhancement was based on government policy, the power of information technology and the development of social innovation. It could explain 97 percent of the variation in awareness enhancement. The development of social innovation depended on the power of information technology and government policy. It could explain 84 percent of the variation in the development of social innovation. The power of information technology was based on the government policy where 73 percent of the variation in the power of information technology could be explained.

The direct and indirect influences among variables for improving the elderly quality of life of the in the 5G digital age

Table 6 Direct, indirect, and total influences of the studied factors

Influence of variables	Causal relationship		
	Direct	Indirect	Total
Government policy	0.77**	0.21*	0.98**
Power of information technology	-0.14	0.20*	0.20*
Social innovation development	0.38**	0.00	0.38**
Awareness enhancement	0.01	-	0.01

* With the significance at 0.05 level, ** With the significance at 0.01 level

According to Table 6, it was found that the operation of government policy had the total influence on the development of elderly quality of life in the 5G digital age the most followed by the development of social innovation and power of information technology, respectively. The awareness enhancement had no influence. However, when considering only the factors affecting the development of the elderly quality of life in the 5G digital age in Bangkok area, it was found that the variable of government policy had direct influence on the development elderly quality of life in the 5G digital age the most followed by the development of social innovation. The power of information technology only had the indirect effect on the development elderly quality of life in the 5G digital age.

Discussion on the research results

Regarding the influence on the development of elderly quality of life in the 5G digital age in Bangkok area, the research results revealed that the data was collected from the verification of parameter of the influence coefficients of the latent variables studied in the structural model modified and revised. The analysis results could be completely summarized that there was the influence on the development of elderly quality of life in the 5G digital age in Bangkok area consisting of:

1. The operation of government policy affected the development of elderly quality of life because the government policy for the elderly to promote and encourage people, families, communities, public and private organizations to participate in the elderly mission with the use of information technology today. This enabled the elderly to live with dignity, self-reliance, as well as ensuring the rights and welfares to protect various benefits and to improve the elderly quality of life both physically and mentally keeping pace with the world such as in the development of elderly personnel, development of central welfare system in terms of medical treatment, care, and protection to receive basic income welfares. This was consistent with the research of Sorasit Kitrangsan (2017),

Wichan Sai-on (2019), Thanaphon Chittinan, and Nakanang Kunlanatsiri (2017), and Ansita Nanthapisit (2017).

2. The power of information technology indirectly affected the development of social innovation because in developing the society of the elderly in the digital era, it required a lot of competence and curiosity in learning the innovation of information technology as well as preparing for the cognitive aspects in raising awareness, accessing to information, and developing the potential for selecting innovative information technology that is suitable for one's own needs. This was for effectively fit the daily life with social innovation such as the adoption of technology among the elderly in the use of technology and online media as well as social support in the use of artificial intelligence for the elderly. It was consistent with the researches of U. REKA (2018) and InterCare Asia (2020).

3. The development of social innovation affected the development of elderly quality of life because it enabled the innovation in order to reduce inequality in the aging society by applying innovation and technology in the 5G digital age in line with the current social situation. This was to facilitate the life of the elderly causing the development to meet the needs and contribute to a better quality of life for the elderly such as the use of technology and online media to reduce loneliness. This increase the knowledge of basic self-care by keeping pace with online medical news. It was consistent with the researches of Chonlakarn Songsri, Phanthiracha Fuangthong, and Songsuda Mueanthaisong (2018), Suwit Thirakot and Weerapong Phonnikornkit (2018).

4. The awareness enhancement had no direct effect on the development of elderly quality of life in the 5G digital age in Bangkok area because it could raise the awareness for the elderly to understand their feelings, thoughts and emotion honestly in order to be able to assess themselves, have confidence and self-confidence, self-conscious, know their own strengths and weaknesses. This yielded positive effect on the daily life of the elderly and was consistent with the research of Ministry of Digital Economy and Society (Ministry of Digital Economy and Society, 2018). Enhancing knowledge, understanding and utilization of digital technology was necessary. This would help the older people make creative use of technology and benefit their use. They also had knowledge of the world and were able to find correct information by themselves not be a victim of scammers. In addition, in terms of mental health, the use of digital technology could also play a role in promoting activities with a direct effect on the development of quality of life as little as 0.01 in correspondence with the research of Chanon Sirithorn (2018).

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