

# An Analysis of Elderly Use of Digital Technology in Thailand

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**Abstract**—The number of older people worldwide aged 60 years and over has increased. The continuous change in population structure has become a concerning global issue. Thailand is one of the countries that face the problem. The number of older people is higher than the number of children under 15 years old. This changing situation requires preparing the elderly to live to their fullest potential. The elderly population is on the rise globally. It's an age group that should live to their fullest potential to enhance the quality of their life, and they should be prepared to live life in a way that benefits them, their family, and society. The elderly should be able to access digital technology and benefit from it. Therefore, it is necessary to educate the elderly to choose the right digital technology for their quality of life and to protect themselves from cyber threats. This study performs an exploratory factor analysis of digital technology competency—a multistage random sampling method was used to obtain a sample of 225 older people in Thailand. The tool used was a questionnaire on digital technology competency, which included 45 questions on a 5-point scale. Data were analysed using descriptive statistics and exploratory factor analysis using the varimax rotation method. The exploratory factor analysis of digital technology competency for the elderly in Thailand found six essential components: 1) use of mobile operating systems, 2) data file management, 3) cloud data management, 4) use of support applications, 5) use of communication applications, and 6) use of technology for security. Thus, the elderly needs to develop online media literacy to safely navigate the internet while creatively using data found in the virtual domain.

**Keywords**—elderly, career preference, digitalization, digital technology, digital skill

## 1 Introduction

Technology can benefit the elderly by helping them make full use of their free time, improving their self-esteem, and reducing their dependency on others [1] [2]. The elderly population is on the rise globally. With advancements in medicine and public healthcare, humans are becoming healthier and living longer lives. This change in the demographic structure, leading to an aging society, has brought about specific

challenges that must be addressed [3] [4]. Agencies involved in improving the quality of life of the elderly in Thailand should prepare the elderly to live life to the fullest in a way that benefits them, their family, and society. Thailand, for instance, needs to cope with various challenges to improve the quality of life of the elderly. Technological advancements have forced people to adapt, or they will be left behind in this rapidly evolving era. Learning to use digital technology is essential for the elderly: It can help the elderly find information on health care, which can aid self-care. It can facilitate enjoyment, make them happy, and improve mental health. Increased social engagement helps the elderly to be aware of movements in society. The elderly can use digital technology to communicate with family members and thereby get closer to and bond with their families. Knowledge of digital technology can also help the elderly find jobs and earn income, reducing their financial dependency on their families. All these factors/aspects of digital technology can help make the elderly feel more valuable [5] [6]. Assisting the elderly in understanding and accepting the benefits of using digital technology will help improve their quality of life [7] [1]. Although the number of information users who are elderly is increasing, this group accesses and uses less technology than other groups. Technology adoption depends on different factors [8] [9]. The study found that only a small group of older people have computer use activities. The study of [10] [11] found that the elderly had limited access to online resources even though the technology is essential for finding information for health-related decisions and healthcare options. Adaptation of modern technology is a significant problem for the elderly in Thailand. Only a small number of the elderly are starting to adapt to technology. Many older people are still not interested in technology. This reason may be because the elderly was born and raised before modern technology. Humans gradually develop technology skills through learning experience. However, because technology is advancing rapidly, most of the elderly cannot keep up with the changes. As a result, this has caused concerns about accessing information technology for the elderly.

To this end, this research analyzed the use of digital technology by exploratory factor analysis (EFA) to identify factors that affect the elderly population's ability to use digital technology in Thailand. The researchers used the result to analyze digital technology skills for the elderly in Thailand to appropriately develop the elderly's skills to use various technologies in their lives. As a result, the elderly will be able to use technology creatively to create new opportunities for learning to take care of themselves. Furthermore, it will enable the elderly to access information and encourage them to use their free time to create benefits, build self-esteem, and reduce dependence on other people under the context of the need for the elderly to adapt to the Next to Normal era.

## **2 Review of the literature**

An aging society has resulted in a reduction of the working population. Without adequate preparation for this shrinkage in the workforce, there will be a substantial negative impact on economic and social security. Helping the elderly develop desirable skills for the future, especially the ability to use digital technology, will encourage them to engage in lifelong learning to reskill and upskill in the workforce [12]. In addition, the COVID-19 pandemic is an emerging disease that spreads rapidly with severe

impacts around the world. The elderly is one of the socially vulnerable groups affected by this pandemic. In addition, people's lifestyles and behaviors have changed. Travel restrictions, lockdowns, and social distancing affect almost every person's daily life, causing increased stress and anxiety.

This rapid change has made the elderly turn to online activities and spend more time online. They use more technology as communication tools. The elderly needs to change their behavior and use technology to reduce the impact of the pandemic, reduce stress and make good use of free time [13] [14]. They also need to use technology to search for information, especially healthcare-related topics [15] [16]. Their use of digital technology may also be due to the social influence of family and friends. An enabling environment, good infrastructure, and using digital technology can bring more comfort into the life of the elderly [17] [18]. The researcher also found the effects of digital technology use by the elderly to help foster family interactions and friends. It also helps them find up-to-date information [19] [20]. However, the elderly does have some concerns about the use of digital technology, including physical pain from using computers for an extended time, fear of technological complexity [21] [22], and a general lack of experience because they do not possess their own smartphones or tablets [23].

### **3 Research methodology**

#### **3.1 Design**

The researcher uses exploratory factor analysis (EFA) to identify factors that affect the elderly population's ability to use digital technology from the study of concept papers and related research.

#### **3.2 Research sample**

The research sample comprised 225 older people in Thailand using multistage random sampling. We first conducted random cluster sampling, with the northern, central, northeastern, and southern regions as arbitrary units. We then applied simple random sampling to select provinces in each area. We used factor analysis, an extensive sample size method, to determine the appropriate sample size [21] have proposed that the sample size for composition analysis should be five units per variable. In this study, there were 45 variables; therefore, a minimum sample size of 225 was determined. The researcher collected the samples from areas frequented by many older people, such as older persons at home, local communities, a center for quality-of-life development, nursing homes, and elderly clubs.

#### **3.3 Research instruments**

The researcher used an online questionnaire to solicit the opinions of the elderly on the different components of digital technology competency and divided it into two parts: The first inquired after the respondent's general information and the details of digital technology competency obtained from the study of related concepts and theories.

The second part of the questionnaire was a 5-level scale ranging from lowest (1) to highest (5), consisting of 45 items. Five experts examined content validity. The value was between .80–1.00. The questionnaire was tested on 30 older people (not part of the sample) to check its reliability using Cronbach's alpha coefficient formula. The value obtained was .987.

### 3.4 Data analysis

The researcher analyzed the data by exploratory factor analysis using the varimax rotation method after selecting components with an eigen value greater than .50.

## 4 Research findings

Our exploratory factor analysis results on the digital technology competency of the elderly, considering an eigen value of 1.00 or higher that is the sum of squares of the coefficients of each component, identified 12 significant components. The variance of these 12 components accounted for 77.42% of the total variance. Orthogonal rotation analysis was performed using the varimax method to clarify the variables related to the components, as shown in Figure 1.

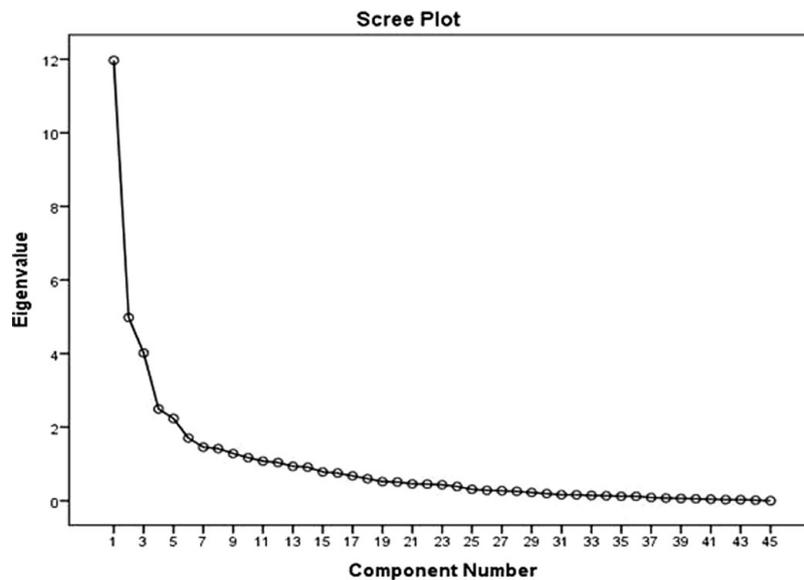


Fig. 1. Variables related to the components

Of the 45 components, 12 components had factor loadings greater than .50. The prominent components must have at least three variables to be considered components.

Six components passed this criterion with factor loadings greater than .50. The factor loadings after orthogonal rotation using the varimax method are shown in Table 1.

**Table 1.** Factor loading

Factor Name	Eigen Value	% of Variance	Variable	Factor Loading
Use of mobile operating systems	11.97	26.61	Able to store data in their mobile phone.	.921
			Able to delete applications and files on a mobile phone.	.856
			Can connect to the internet using a mobile phone.	.848
			Able to set security settings on a mobile phone.	.779
			Able to set notifications.	.735
			Able to download and install applications on a mobile phone.	.685
			Able to adjust display font size on a mobile phone.	.634
Data file management	4.98	11.06	Able to move a file into a designated area.	.846
			Able to rename a file on mobile.	.817
			Able to categorize data management properly.	.781
			Able to manage files on a mobile phone correctly and adequately.	.638
			Able to share data files to other applications or others safely.	.625
Cloud data management	4.02	8.92	Able to share files or information with others through the cloud correctly and securely.	.895
			Able to manage files on the cloud correctly and securely.	.888
			Able to manage data privacy in the cloud correctly and securely.	.885
			Able to subscribe to cloud services for data storage.	.775
Use of support applications	2.49	5.54	Able to create video clips on purpose.	.775
			Able to design graphics or illustrations for a specific purpose.	.741
			Able to use the application to calculate answers as needed.	.739
			Able to use the calendar to schedule necessary appointments and set notifications.	.591
			Able to use digital media properly for a specific purpose without infringing copyright laws.	.579

(Continued)

**Table 1.** Factor loading (*Continued*)

Factor Name	Eigen Value	% of Variance	Variable	Factor Loading
Use of applications for communication	2.24	4.97	Able to use electronic banking systems correctly and securely.	.910
			Able to register an application to receive privileges from the public and private sectors correctly and securely.	.894
			Able to store contact information, phone numbers, etc.	.727
			Able to use Line application securely and adequately.	.575
Use of technology for security	1.70	3.79	Able to bookmark a webpage of interest.	.736
			Able to manage the display window of a website properly and securely.	.655
			Able to screen information securely.	.620
			Able to use email to communicate and register with other applications correctly and safely.	.519

## 5 Discussion and conclusion

An aging society in the digital age is a challenge, given the continuous lifestyle changes and technology. From the analysis of these six components, we found the critical components of useful digital technology include smartphones, applications, cloud systems, electronic transactions, and searching for information, which has changed the lifestyle of the elderly. The people closest to the elderly (friends and family) are a driving force behind their acceptance of technology. However, the study of [24] found that smartphones that were complicated to use may cause the elderly to have difficulty using the device. As shown in the research, knowledge of equipment and functionality helped the elderly be self-reliant. If the elderly has developed a higher understanding of usage, they will use and benefit from the device more. This is consistent with research by [25] [26], who provided technology skills training for the elderly. Our study, similarly, found that our sample of elderly folk was knowledgeable and optimistic about technology. They view technology as valuable and necessary for them to keep up with changes in the world by providing access to news, health issues, and national events. Therefore, technology has become an integral part of their lives. According to [27] [28], the elderly had access to communication technology via the internet to conveniently communicate with family members. Although the technology is complex, it is a channel that allows the elderly and their family members to share and experience a new form of family bonding. Nearly half of the active older people use social networks almost every day. In addition, [29] [30] claimed that technology is essential for the elderly to gain online media literacy, keep themselves safe while using the internet and creatively access data in the virtual world. They were preparing to live life to the fullest in a way that benefits them, their family, and society. This research can lead to the development of knowledge

and skills for the elderly to use technology creatively to create confidence and take full advantage of technology.

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