



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v13-i6/17618>

DOI:10.6007/IJARBSS/v13-i6/17618

**Received:** 08 April 2023, **Revised:** 06 May 2023, **Accepted:** 25 May 2023

**Published Online:** 11 June 2023

**In-Text Citation:** (Shuaizhi & Aziz, 2023)

**To Cite this Article:** Shuaizhi, S., & Aziz, A. B. A. (2023). Digital Survival of Elderly Population: The Impact of Media Use on Social Adaptation. *International Journal of Academic Research in Business and Social Sciences*, 13(6), 2259 – 2270.

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Vol. 13, No. 6, 2023, Pg. 2259 – 2270

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[www.hrmars.com](http://www.hrmars.com)

ISSN: 2222-6990

## Digital Survival of Elderly Population: The Impact of Media Use on Social Adaptation

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### Abstract

In the wave of digitalization, digital media has brought about changes in the social information dissemination ecology and social environment, giving rise to a new form of digital lifestyle. To explore the impact of digital media use behaviors of older adults on their social adaptation to the digital wave, this study investigated the usage of digital media and social adaptation among 207 older adult individuals through a combination of online and offline random sampling. The collected sample data was analyzed using methods such as Pearson correlation analysis and multiple linear regression analysis. The study found that older adults who use digital media exhibit a higher level of social adaptation. However, the relationship between digital media usage and social adaptation in the elderly is not a simple linear one, as self-efficacy plays a partial mediating role between the two. The use of digital media helps to improve the self-efficacy of the elderly, facilitating the psychological impact of individuals on social adaptive behaviors and promoting the process of positive aging.

**Keywords:** Digital Media Use, Social Adaptation, Self-efficiency, Older Adults, China

### Introduction

Media is not merely a means for people to communicate and interact, they are an environment in themselves. The “scene” or “context” is redefined as the space created by the medium, the people involved in the communication, and the behavior of certain actors in the interaction, from shaping specific behavioral styles to universal interaction patterns, which leads to changes in interpersonal interaction and consequently to a reshaped social environment and a changed environment of information dissemination (Meyrowitz, 1986). Digital media such as smartphones have opened up and integrated systems and services in the city, creating a more integrated form of digital life. Mobile payment, drip taxi, cell phone ordering, online ticket booking, e-government, online medical care, and e-social security have brought much convenience to urban life, but they have also brought a huge “digital divide” (Sun, 2021). According to the data of the 49th China Internet Development Statistics Report released by China Internet Network Information Center (CNNIC), as of December 2021, the size of older adults Internet users aged 60 and above was 119 million, accounting for 45.1% of the country's elderly population, of which 53.8% of the elderly could not independently use smartphones to find information, 47.9% could not use smartphones to purchase daily

necessities, and 30.3% are unable to complete online activities by showing health code/travel code.

In November 2020, the Chinese government promulgated “the Notice on the Implementation Plan for Effectively Addressing the Difficulties of Using Smart Technologies for the Elderly”, aiming to effectively address the difficulties of the elderly in the application of smart technologies through policy guidance, so that the majority of the aging population can better adapt and integrate into modern society. The National Health Commission, the Ministry of Industry and Information Technology, the Ministry of Transport and other national ministries and commissions have issued detailed documents, focusing on emergency response, transportation, daily medical care, consumption and other aspects, to improve the experience of older users in using Internet services, and effectively solve the difficulties of the aged in using smart technology. China's “national strategy to actively cope with the aging of the population” includes helping the urban aged bridge the digital divide and adapt to urban life, which is of significant importance to the aged and plays a vital role in maintaining social stability and family harmony.

Digital media, as an important medium and tool for social engagement, has a tremendous empowering effect on the social lives of the older adults (Wang et al., 2020). Digital technology helps increase access to information resources, expands the space for expression, and enhances individual capabilities. Taking digital networks as an example, in the elderly population, the Internet has become a beneficial tool for technological empowerment. By providing information resources, it promotes cognitive activities among the older adults, increases communication channels for their social activities, helps them perform daily tasks more efficiently, and enriches their leisure and entertainment life (Bianchi, 2021). Social media technology, in particular, has the potential to serve as a vehicle for social support (Cyranowski et al., 2013; McDougall et al., 2016). During the COVID-19 pandemic, older adults shifted the medium of their contacts from in-person to telephone or social media, help to strengthen social connections (Sidani, et al., 2022). Media usage has a positive impact on various aspects of the older adults, including health, social engagement, social relationships, social psychological adaptation, and social environmental adaptation (Millard et al., 2018; Zhao, Liang & Gu., 2021; Sidani, et al., 2022). This study analyzes the impact of digital media usage among urban older adults on their social adaptation. It aims to improve the media literacy of the elderly population, making them fully aware of the importance of digital integration in adapting to modern society, enhancing their life satisfaction and happiness (Hsiao & Dillahunt, 2018), bridging the digital divide within the elderly population and between older adults and younger generations, and promoting social integration (Loges & Jung, 2001). At the same time, it is beneficial for policymakers to fully understand the impact of media on society, mitigate or bridge the effects of the digital divide on China's high-quality and balanced economic and social development, and thus formulate more scientifically sound policies to effectively address the difficulties faced by the older adults in using digital technology.

### **Literature Review and Theoretical Hypothesis**

#### **A) Social adaptation and its influencing factors**

Social adaptation is a multidimensional structural category that refers to the gradual reception of moral norms and behavioral codes of the existing society by individuals, and the ability to respond to social stimuli in a specific environment within the limits allowed by the norms. For example, a series of psychological attitudes, behavioral patterns and cultural

perceptions that people adapt in order to reach a harmonious relationship with the external living environment, including psychological adaptation, behavioral adaptation and cultural adaptation (Yang, 2021). The influencing factors of social adaptation of the older adults include individual factors in terms of their own physiological and psychological characteristics and personality traits, as well as social environment factors including family structure, lifestyle, economic status, and living environment (Li, 2014).

#### B) Media use and social adaptation

The development of the Internet and new media technologies and the diversified functions of digital media as a vehicle for urban cultural communication have had a significant impact on people's lifestyles (Zhou, 2018). Some studies have found that the appropriate use of short video applications in digital media expands the social network of older people to a certain extent and improves their social adaptation level (Jin et al., 2021), and the application of online technologies can change the quality of life of older people, expand their professional activities and communication, and improve their social adaptation level to the environment and daily life (Anikeeva et al., 2019). Digital media applications impact older adults on social relations and psycho-emotional aspects. In terms of social relationships, online media can facilitate communication between older adults and others and provide relevant social benefits for older adults (Yu et al., 2018).

At the same time online media provide techniques to establish and manage social networks in novel ways, connect people and facilitate communication, allowing aging social network users to perceive higher levels of social support and a sense of connection to friendship networks (Yu et al., 2016) and feel higher levels of interpersonal connectedness (Hong et al., 2015). It is critical to establish a fourth community circle outside the original family and friend network to prevent social isolation and marginalization of the elderly population (Sun & Ji, 2018). In terms of psychoemotional aspects, some studies have found that online media have a positive moderating effect on improving subjective well-being and social-emotional health in older age groups (Deng, 2021). Online interactions can help older groups pay more attention to their health and well-being and reduce feelings of depression and loneliness (Wu & Zhang, 2021), and training older adults to use social media can improve their cognitive abilities, self-esteem, and can have an overall impact on their physical and mental health (Shapira et al., 2007).

It has been found that internet or digital media use positively affects one aspect of social adaptation. This is such as interpersonal relationships or psycho-emotional aspects in older adult groups. Social adaptation includes psychological, behavioral and cultural cognitive dimensions. Based on the complexity and comprehensiveness of social adaptation, this study proposes the following hypotheses in terms of digital media use and overall social adaptation of older adults.

H1: To older adults who do not use digital media, those who use digital media show higher social adaptation.

#### C) Self-efficacy, media use, and social adaptation

Self-efficacy is an individual's perception of his or her ability to perform an activity to achieve a desired goal (Marakas et al., 2007). It is one of the most significant factors that influence an individual's willingness and ability to use the latest information technologies (Glassman & Kang, 2012). Self-efficacy is a pivotal concept to understand how individuals quickly and easily adopt new technologies and develop their skills (Hsu & Huang, 2006). Older adults' use of

digital media is associated with higher self-efficacy and curiosity (Zambianchi et al., 2019). Older adults are in the later stages of life development and face the loss of physical and social resources in many aspects, and a good sense of self-efficacy can improve an individual's sense of control over the environment (Shen & Tang, 2004), which helps older adults to develop an optimistic state of mind, enabling them to better regulate their emotions in various ways and have more self-confidence to adapt to social life. Older adults' self-efficacy partially mediates daily living ability, social support, and loneliness (Jing et al., 2020). Improving older adults' self-efficacy can improve their social adaptation (Zhou et al., 2021).

However, older age groups bring psychological, physiological, and cognitive changes due to age, which directly affect their use of new media technologies (Xu, Hu & Huang, 2017). The older adults has low awareness and operational ability of online technology, lacks online confidence, and lacks the confidence to explore various technologies, and is prone to technology anxiety and fear (Hawley-Hague et al., 2014). In China, the majority of older adults did not formally learn Pinyin when they were young, resulting in their inability to use Pinyin input methods on smart devices, which, combined with poor voice input recognition, leads to certain barriers in human-computer interaction (Jiang & Lv, 2020).

Studies have focused on the effects of older adults' self-efficacy on their physical and mental health, and the relationship between self-efficacy and digital media use behaviors. There are fewer studies on the influence of self-efficacy on overall social adaptation, and the relationship between social adaptation and digital media use. Thus, the study proposes the following hypotheses based on fragmented discussions regarding the association between digital media use, self-efficacy, and social adaptation among older adults.

H2: Self-efficacy mediates the relationship between digital media use and social adaptation in older adults.

H2a: Older adults' digital media use behavior is positively correlated with their self-efficacy.

H2b: Self-efficacy of older adults is positively correlated with the level of social adaptation.

## Research Design

### A) Data source and sample status

The World Health Organization considers it feasible to use retirement age to define the older adults. China's current retirement policy, the legal retirement age for enterprise workers is 60 years old for men and 55 years old for women. In reality, individuals will experience a number of events in their lives one after another after reaching the age of 50. These events include retirement, widowhood, health deterioration, etc., and people enter retirement after another. Therefore, combining the current retirement system policy and life course theory in China, the sample of this study was determined to be people over 55 years old.

The survey was conducted simultaneously using offline and online questionnaires. Taking into account factors such as the cultural level and physical condition of the urban elderly population, to ensure that the respondents correctly understood the test items and successfully completed the questionnaires, three volunteers were recruited to assist in distributing and collecting paper questionnaires. The volunteers received preliminary training on survey content. It was conducted using random sampling. Offline questionnaires were conducted by three volunteers in places with a higher population of elderly people, such as urban squares and parks in Guilin. The online questionnaires were implemented and data collected using the "Wen Juan Xing" online platform for survey implementation and data collection.



A total of 207 valid questionnaires were collected, including 123 online questionnaires and 84 paper-based questionnaires. There were 81 males (39.1%) and 126 females (60.9%). Among the respondents, 109 (52.7%) were aged 55-60, 38 (18.4%) were aged 61-65, 42 (20.3%) were aged 66-70, and 18 (8.7%) were aged 71 or above. In terms of education level, 116 (56%) had a high school diploma or above, 50 (24.2%) had a junior high school education, 31 (15%) had only completed primary school, and 10 (4.8%) were illiterate.

#### B) Variable measurement

The dependent variable in this study is social adaptation, which is measured by the Social Adaptation Scale for Middle-aged and Older Adults by Jin, et al (2021). The scale consists of 8 items, which are "willing to participate in community activities, willing to contribute to society, like to learn, feel useful to society, able to adapt to social changes, able to accept modern social views, able to accept new social policies, and feel good about their current living condition". Measured using the 5-point Likert scale, with "1" indicating "completely does not fit" and "5" indicating "completely fits." Cronbach's alpha coefficient is 0.899, indicating high reliability of the scale.

Digital media use behavior was the independent variable in this study. Seven questions were used to measure digital media function in China according to the MTUAS Media Technology Use and Attitude Scale (Rosen et al., 2013). Among the questions were "Check your smartphone", "Check your smartphone between work", "Post status updates on your smartphone app account", and "Post photos on your smartphone app account", "Posting photos on your smartphone app account", "Viewing other people's profiles and news," "Commenting on other people's news" and "Liking or sharing other people's posts on social media". The options range from "1" which indicates "never" to "10" which indicates "always". Cronbach's alpha is 0.944, indicating that the reliability of the scale is high.

Self-efficacy is the mediating variable in this study, which is measured by combining the General Self-Efficacy Scale (Schwarzer, 1997) and the Self-efficacy Scale (Kim & Glassman, 2013), and setting it according to the characteristics of the elderly population in the digital media environment. The questionnaire measures self-efficacy in three dimensions: information reception, information processing, and information transmission.

The dimensions of information reception include three items: "I am confident in using a smartphone to receive calls and text messages", "I am confident in using a smartphone to read news, watch short videos, or listen to music", and "I am confident in using a smartphone to receive private messages from various apps".

The information processing dimension includes five items: "I am confident in finding useful information on my smartphone," "I am confident in using my smartphone to save pictures, videos, or text messages," "I am confident in using my smartphone to modify personal information," "I am confident in using my smartphone to create information," and "I am confident in processing received information on my smartphone according to prompts."

The dimensions of information transmission include three items, which are "I am confident in using a smartphone to make calls or send text messages", "I am confident in using a smartphone to send video or voice messages", and "I am confident in using a smartphone to post text, pictures, or video messages on various apps. Using a 4-point Likert scale, the scale ranged from "1" for "not at all true" to "4" for "completely true". Cronbach's = 0.960, which indicate that the reliability of the scale is high.

### C) Control variables

According to the analysis of the literature, gender, age, education level, and residential status have an impact on the social adaptation of older adults, so these factors were treated as control variables in this study as shown in Table 1.

Table 1

*Data processing of control variables*

Control variables	Measurement items	Data processing
Gender	A1.Gender	1=Male; 2=Female
Age	A2.Your age	0=Under 55 years old (terminated response); 1=55-60 years old; 2=61-65 years old; 3=66-70 years old; 4=71 years old and above
Educational level	A3. Your highest level of education	1=unreadable; 2=elementary or private school; 3=junior high school; 4=high school and above
Living status	A4. Your current living status	1=living alone; 2=living with children; 3=nursing home

The sample data were be statistically analyzed through SPSS25.0.

## Results and Discussion

### A) Descriptive statistics and correlation analysis of variables

Social adaptation of older adults was significantly correlated with media use, self-efficacy, and educational attainment, as shown in Table 2. There were significant positive correlations between social adaptation and media use ( $\beta=0.558$ ,  $p<0.01$ ), self-efficacy ( $\beta=0.547$ ,  $p<0.01$ ), and educational level ( $\beta=0.405$ ,  $p<0.01$ ). It follows that older adults with more positive media use behavior, better self-efficacy, and higher education levels have better social adaptation.

Older adults' media use was positively correlated with self-efficacy ( $\beta = 0.642$ ,  $p < 0.01$ ) and education ( $\beta = 0.482$ ,  $p < 0.01$ ) and negatively correlated with age ( $\beta = -0.187$ ,  $p < 0.01$ ), meaning that the higher the self-efficacy and education of older adults, the more positive their media use behavior was; the older they were, the more negative their media use behavior was.

Self-efficacy of older adults was significantly and positively correlated with education ( $\beta = 0.400$ ,  $p < 0.01$ ) and negatively correlated with age ( $\beta = -0.175$ ,  $p < 0.05$ ), which means that the higher the education level of older adults, the better their self-efficacy; the older they are, the worse their self-efficacy is.

The existence of significant correlations among the factors studied is the key to mediating effects construction. The correlation analysis revealed that the three variables of social adaptation, media use, and self-efficacy were two-by-two correlated and all reached significant levels, which provided the basis for mediating effects analysis.

Table 2

*Means, standard deviations and correlations of variables*

	Mean	Standard deviation	Social adaptation	Media use	self-efficacy	Age	Educational level
Social adaptation	3.936	0.855	1				
Media use	2.918	1.752	0.558**	1			
self-efficacy	3.144	0.876	0.547**	0.642**	1		
Age	2.850	1.030	-.101	-.187**	-.175*	1	
Educational level	3.310	0.899	0.405**	0.482**	0.400**	-.122	1

\*  $p < 0.05$  \*\*  $p < 0.01$   $n=207$ 

## B) Analysis of variance of digital media use and social adaptation

To test H1, a one-way ANOVA was used to test the relationship between digital media use and social adaptation among older adults. As a whole, the level of social adaptation of older adults who do not use digital media (Mean=2.88, SD=0.29) is significantly lower than that of older adults who use digital media (Mean=4.00, SD=0.84,  $p < 0.01$ ), as shown in Table 3, and H1 holds.

Table 3

*Analysis of variance of media use and social adaptation*

	Do you use a smartphone? ( Mean ±Standard deviation )		F?	p?
	Use(n=195)	Not using (n=12)		
Social adaptation	4.00±0.84	2.88±0.29	21.570	0.000**

\*  $p < 0.05$  \*\*  $p < 0.01$ 

Therefore, the government, media organizations, and communities should work together to encourage older adults to use digital media. Optimising information content and flexible promotion and guidance to help older adults actively embrace digital life can create a positive and age-friendly digital media environment.

## C) Analysis of the mediating effect of self-efficacy

In order to explore the mediating effect of self-efficacy in media use and social adaptation, model one, a regression analysis of media use and social adaptation was conducted, and a regression coefficient value of 0.272 ( $t=9.628$ ,  $p < 0.01$ ) was detected, which showed a significant positive relationship between media use and social adaptation. Model 2, the regression analysis of the relationship between media use and self-efficacy of the older adults was conducted, and the regression coefficient value was detected as 0.321 ( $t=11.977$ ,  $p < 0.01$ ), and the digital media use behavior of older adults had a significant positive influence on self-efficacy, and H2a was established. Model 3, regression analysis of the relationship between media use, self-efficacy, and social adaptation was conducted, and the regression coefficient value for media use was 0.172 ( $t=4.863$ ,  $p < 0.01$ ), and the regression coefficient value for self-efficacy was 0.314 ( $t=4.445$ ,  $p < 0.01$ ), indicating that media use and self-efficacy



produced a significant positive influence relationship on social adaptation, and H2b holds. It also implies that the effect of media use on social adaptation of older adults is at least partially realized through network self-efficacy, which can prove the existence of mediating effect, as shown in Table 4.

Table 4

*Mediating effect of network self-efficacy between digital media use and social adaptation*

Model	Standardized regression equation	$R^2$	$B$	$t$	$p$
Model 1	$Y=0.272X$	0.311	0.272	9.628	0.000**
Model 2	$M=0.321X$	0.412	0.321	11.977	0.000**
Model 3	$Y=0.172X + 0.314M$	0.372	0.172	4.863	0.000**
			0.314	4.445	0.000**

\*  $p < 0.05$  \*\*  $p < 0.01$

Based on the regression results and research hypotheses, this study conducted a mediating effect test, and after controlling for five demographic attribute variables: age, gender, education, work status, and residence status, the results showed that self-efficacy was a partial mediating effect between digital media use and social adaptation among older adults, with a mediating effect value of 0.084, a direct effect value of 0.144, and a total effect of 0.228, the contribution of the mediating effect to the total effect was 36.934%, as shown in Table 5, and H2 partially holds.

Table 5

*Summary of intermediary effect size results*

Item	Test conclusion	c Total effect	a*b Intermediary effect	c' Direct effect	Effectiveness ratio calculation formula	Effect ratio
Media use => self-efficacy => Social adaptation	Partial mediation	0.228	0.084	0.144	$a * b / c$	36.934%

The process of using digital media requires certain knowledge and skills, and when older adults acquire these skills, their online self-efficacy increases as well as their ability to develop skills and access information. Self-efficacy will influence behavior by influencing individuals' psychology, and self-efficacy is a significant predictor of the formation of individuals' social adaptation ability (Zhang, 2010). Therefore, according to the digital media usage of the older adults, we analyze their current level of media literacy, improve the media operation ability and literacy of the older adults in terms of organizational guidance, intergenerational support and individual learning, enhance the sense of online self-efficacy of the older adults, bridge the "digital divide" of the older adults, and help the elderly adapt to digital survival.

## Conclusion

Under the wave of digitalization, it is of great theoretical and practical significance how the elderly population can adapt to digital social life, how to enable the older adults to cross the digital divide and enjoy the convenience of digital life, and what changes the digital integration represented by the use of digital media can bring to the social adaptation of older adults, as well as providing a feasible path for the digital survival of the older adults.

The results of the study show that there is a significant difference in the level of social adaptation of the older adults with or without the use of digital media, and the older adults who use digital media show higher social adaptation, and digital communication media such as smartphones and the Internet have a positive impact on the social adaptation of the older adults. Moreover, the higher the level of education, the higher the level of digital media use, self-efficacy, and social adaptation.

Self-efficacy played a partially mediating effect between older adults' digital media use behavior and social adaptation, i.e., digital media use helped to enhance older adults' Self-efficacy, and Self-efficacy had a positive effect on their social adaptation, and its mediating effect accounted for 36.908% of the total effect.

This study also has some limitations. First, the older adults generally has a low level of education and is influenced by language, vision, and hearing factors, which to some extent limits the acquisition of a valid sample size. Second, there is a partial mediating effect of older adults' online self-efficacy between digital media use and social adaptation, and there are other influencing factors between digital media use and social adaptation. Future research should fully consider other possible influencing factors, such as mental health and social support, and enrich the research results through longitudinal design, experimental studies, in-depth interviews, and focus groups.

### **Funding**

The research receives funding from the 2021Guangxi Province Philosophy and Social Science Planning Research Project (21FXW013).

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