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Facing Digital Transformations in Society: A Pilot Study on Perceptions of the Elderly in Guangdong, China

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Abstract: Recently, digital transformation has been rapidly developing in China, along with an increasing aging trend. The elderly are well-pushed to face the challenges brought by this transformation. This study aims to explore the elderly's perception of a digital-driven society in terms of their abilities to use digital devices or services and the effects of digital transformation on their daily life. This study conducted an online survey among elderly users of digital devices in Guangdong Province, China. It was found that around half of the elderly have used digital devices in their daily life and admitted that digital transformation has made life more enjoyable and convenient. However, because of their physical health status, there were various challenges. The developer of digital devices should well consider the needs of elderly users to enrich a senior-user-friendly society.

Keywords: Digital transformation

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1. Introduction

This paper focuses on the elderly's perception of digital transformation in society and their feelings towards this change. This study was designed for people aged over 50 in Guangdong province during 2023. The results showed that almost 60% of the elderly were satisfied or agreed that digital transformation made life more convenient and enjoyable. In other aspects, there are also some challenges, which are named as a digital divide in society, due to characteristics of the physical health of the elderly and the rapid development of technology. At the same time, the presence of a digital divide in social transformation should be addressed from the user or stakeholder perspectives.

2. Literature review

2.1. The development of digital society in China

The development of China's digital society has been facilitated by the "Internet+" strategy introduced in

2015, which has played a central role in driving innovation and promoting investment in digital technologies [1]. Similarly, initiatives like the Made in China 2025 plan have focused on fostering the development of key industries such as artificial intelligence, robotics, and advanced manufacturing [2]. With over 900 million internet users and a booming digital economy, China has become a global leader in digital transformation [3]. China's digital society has recently experienced significant growth, driven by various factors [1]. One of the most notable trends is the proliferation of e-commerce platforms, which have revolutionized the way people shop and conduct business [4]. Companies like Alibaba and JD have become well-known names, offering a wide range of products and services to millions of consumers across the country [5]. Additionally, mobile payment systems such as Alipay and WeChat Pay have become ubiquitous, enabling seamless online transactions and financial services for users.

Nonetheless, the development of China's digital society also faces significant challenges and implications [4]. Data privacy and cybersecurity have emerged as major concerns, with high-profile data breaches and security incidents raising questions about the protection of personal information [5]. Additionally, the digital divide between urban and rural areas, as well as among different socioeconomic groups, remains a persistent issue [1]. Addressing these challenges is crucial for ensuring that China's digital society is inclusive and accessible to society.

2.2. Rapid aging trend in China

The global population is experiencing a significant shift towards aging, with profound implications for various aspects of society. In the year 2023, there were above 2900 million people aged over 60 years old, which is 21% of China's population [6]. What's more, the population of elderly had a constant growth in the last 10 years, and it was predicted that it will exceed more than 30% of the total population in 2035 [7]. Population aging is often accompanied by a decline in physical health and functional abilities, leading to an increased reliance on healthcare services and long-term care. The digital divide emerges as a critical challenge, as many elderly individuals struggle with digital literacy and access, hindering their ability to engage with electronic devices and online platforms effectively. Eliminating this gap is essential for promoting the well-being and social inclusion of the elderly in this digital era, necessitating efforts to provide training, support, and resources to enhance their digital skills and confidence in using these devices.

2.3 Digital divide for the elderly in China

The internet penetration rate was up to about 76% as of 2023 and using digital devices has become a necessary part of people's life [8]. Unfortunately, during the COVID-19 pandemic, many elderly faced problems using health QR codes and travel records, indicating that there exist many problems for the elderly in using technology [9]. To understand this phenomenon, most studies tried to investigate the technological development and the lifestyles of the elderly through visions of the government, society, emotions, and technology. Some considered there were three limitations from the aspects of body, knowledge, and mentality [10]. Other scholars also suggested that the elderly were more likely to be stressed, nervous, and afraid when faced with new experiences [11]. On the other hand, some findings showed that some specific groups of the elderly had a stronger motivation to learn and adapt to the digital times [12].

To help the elderly adapt to digital times, policies should be implemented by the government [9]. For instance, the traditional manual payment methods should be retained and the offline phone bill top-up channels should be supported. In addition, it is necessary to design elderly-friendly digital devices [12]. Studies emphasized the key to why the elderly possess negative emotions while using electronic digitals, is mainly

because the designers lack humanistic care for the elderly when designing the devices. Some scholars focused on the design of digital devices and illustrated that the elderly can provide suggestions when designing digital devices [11]. Results have shown that it was more eligible to invite the elderly in the process of design as it may exhibit better performance than the team with only designers [12].

Although many researchers focus on the effects of digital transformation on elderlies, few researchers collect general feedback on their perception of society's digital transformation. To understand the perception of the elderly in digital times and the benefits brought about by technology, this research focuses on the perceptions of elderlies in Guangdong province, China, on the concept of digital transformation in society.

3. Research design

This study aims to investigate the application of digital devices among the elderly and its effects on their daily life. The investigation was conducted in 2023 in Guangdong Province, where an online survey was conducted among individuals aged 50 and above. The study analyzes the ability of the elderly to use digital devices and their attitude toward the effect/change on life caused by the increasing usage of digital devices.

3.1. Data collection

To understand the life of elderlies in a digital society, online questionnaires were designed for individuals over 50 years old in Guangdong province, China. Information on the elderly's general ability to use digital devices/services, their attitude towards using digital devices, and their effects on daily life were collected. A 5-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree) was used to assess their agreement with the statement of each question. There were a total of 156 samples of the elderly who are above 50 years old, and among them 83 samples are 50–60 years old and 74 samples are above 60 years old, which weighted 53% and 47%, respectively. This is shown in **Table 1**.

Table 1. Number of samples by age

	Aged 50–60	**Aged 60+**
Number of Samples (*n*)	83	74
Percentage (%)	53%	47%

4. Data analysis

Among individuals aged 50–60 years old, almost 46% of individuals think they have grasped abilities in using electronic devices, with a similar percentage among individuals aged above 60 years old (49%). Over 60% of elderlies agree that digital transformation makes daily life more enjoyable and over half of the elderly agreed that life has become more convenient; 47% of individuals think that electronic devices helped them communicate with others much easier than the population group aged between 50–60 (68%). Individuals who strongly disagreed varied in percentage between the group aged 60 years old and above and the group aged 50–60 years, at 32% and 18%, respectively. A great proportion of the elderly aged 50–60 years old have expressed that digital devices have brought some challenges to their physical health. This may be due to their greater usage of digital devices as compared to individuals aged 60 years old and above. In addition, both age groups admitted they would be addicted to electronic devices upon long-term use. This is shown in **Table 2**.

Table 2. The elderly's perceptions of digital social transformation

Attitudes towards aspects	Mean	
	(Aged 50–60)	(Aged 61+)
The elderly have a good ability to use digital devices	3.244	3.284
Digital transformation facilitates easy contact with others.	2.963	2.9865
Digital transformation makes daily life more convenient.	3.269	2.986
Digital transformation makes daily life more enjoyable.	2.963	2.905
Digital transformation brings challenges to the elderly's physical health.	2.963	2.730
Digital transformation brings challenges to the elderly's social relationships.	2.963	3.108
Digital transformation makes the elderly addicted to digital devices.	2.963	2.851
n	82	74

There was nearly no difference between people aged over 60 years old and those aged between 50–60 years old in general, while there were some differences in specific questions. Under the aspect "Daily life is convenient in digital times," individuals aged between 50–60 years old scored about 3.27 points, while individuals aged over 60 years old scored 2.99 points. This illustrates that those aged over 60 years old often experience less convenience and satisfaction. In addition, individuals aged 50–60 years old agree that their physical health may be influenced more by digital devices than individuals aged over 60. Furthermore, individuals aged above 60 years old have a worse social relationship than individuals aged between 50–60 years old.

5. Conclusion

Focusing on the general satisfaction of the elderly during digital times, this paper illustrated that over half of the elderly were satisfied with their life and felt like they could master the use of digital devices. They also agreed that digital transformation has brought positive effects to make daily life more convenient and enjoyable. However, there are still some brought by the disability of physical health and unfamiliarity with digital devices. Individuals aged over 60 years old tend to experience a more difficult life than individuals aged between 50–60 years old. Individuals aged above 60 years old also had worse social relationships than individuals aged 50–60 years old. On the contrary, the health of individuals aged above 60 years old was affected less by digital devices. Both groups think they have good skills in using digital devices. This study focuses on the elderly's perception of digital times and measures to enrich the understanding of related fields. Results showed that digital times brought about both advantages and disadvantages to society. Many scholars have since focused on developing solutions to help the elderly adapt to a digital society. The elderly should be treated patiently, and their emotional needs should be taken care of. The government should implement policies to help the elderly learn about digital knowledge and retain offline facilities. In the design process of digitalization, people should consider older users and design elderly-friendly devices. To achieve this, the elderly with relative experience can be invited to the consultation and designing process.

6. Limitation

Firstly, the questionnaire was published online, indicating that the target population could use a mobile phone and have already grasped the skills of surfing the internet. Secondly, there was a "neutral" choice in the questionnaire and the point of view was not concise.

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Disclosure statement

The authors declare no conflict of interest.

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