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From "Health Code" to "QR Code Payment": A Case Study of the Digital Divide among the Elderly in Chinese Social Contexts

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Abstract. With the acceleration of digitalization, China's elderly population faces a severe challenge of the "digital divide." This paper adopts case studies and bibliometric analysis methods, selects two typical cases of "health code verification" and "QR code payment," and deeply analyzes the survival dilemmas faced by the elderly in the digital age in different social scenarios. The study found that the dilemma in the health code verification case mainly stems from the "deprivation of rights" caused by the lack of mandatory policies and technical adaptability; while the dilemma in the QR code payment case comes from the "social exclusion" caused by insufficient social support and trust crisis. Based on this, this paper proposes a "two-dimensional analytical framework for the digital divide." From a comparative perspective between China and other countries, it proposes to build a digital social governance strategy of "tiered inclusion," emphasizing "inclusive innovation" and intergenerational support. The aim is to provide theoretical reference and practical pathways for reducing digital inequality in an aging society.

Keywords: The elderly, Digital divide, Health codes, Mobile payment, Intergenerational support

1. Introduction

1.1 Research background

While young people enjoy the convenience of "going anywhere with just a mobile phone," digitalization has become a sudden barrier for many senior citizens in China. In 2022, news of "an elderly man kneeling at a hospital entrance because of having no health code shocked the public." In 2023, it was exposed that many supermarkets refused to accept cash payments from elderly customers, which once again triggered the debate about "technology hegemony." These real social events reveal a harsh reality: in an era of rapid technological development, the aging steps of the elderly are being left behind.

Data further confirm this divide. According to the 2021 China General Social Survey, the Internet usage rate of people aged 60 and above is only 35.25%, and the situation in rural areas is more

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severe. This not only brings inconvenience to the daily life of the elderly, but also means that in a highly digitalized society, the right to survival of the elderly may face loss.

1.2 Research questions

In the face of this reality, this study focuses on the following issues: in two different scenarios of "health code" and "QR code payment," what are the essential differences between the difficulties faced by the elderly? Have current "age-friendly" measures genuinely addressed their pain points? Through case analysis, this paper tries to reveal the deep logic behind these phenomena and attempts to propose solutions from the perspective of teenagers.

2. Research methods

This research mainly adopts a combination of case study method and bibliometric analysis.

2.1. Case selection criteria

To ensure both representativeness and complementarity, this study selects "health code verification" and "QR code payment" as typical cases based on two criteria: scenario attributes and data support.

These two cases respectively cover the core social scenarios of "public services (mandatory)" and "private consumption (optional)." By analyzing and comparing these different contexts, the study attempts to reveal the digital survival conditions of the elderly people under different forms of social pressure.

According to the 52nd and 53rd Statistical Reports on China's Internet Development released by the China Internet Network Information Center (CNNIC), among the top five digital scenarios frequently used by the elderly population aged 60 and above, the proportion of public service scenarios represented by health codes and consumption scenarios represented by mobile payment are 42% and 38%, respectively [1,2]. This shows that they are the two most frequently encountered and most conflict-concentrated types of digital touchpoints in the daily life of the elderly in China.

2.2. Literature search and analysis framework

In order to enhance the international vision and timeliness of the research, this study systematically reviews the relevant Chinese and foreign literature from 2020 to 2024.

Search Scope:

Keywords: In English, the keywords include "older adults digital divide," "health code," "mobile payment," and "inclusive design."

Time Range: The time frame is limited to 2020-2024 to align with the timeliness required by the rapid iteration of digital technologies.

Inclusion Criteria: English literature is primarily sourced from SSCI/SCI journals, while Chinese literature is mainly from CSSCI journals. Conference abstracts and non-research commentaries are excluded.

Final Sample: This study selects representative English and Chinese literature, forming the theoretical basis for a China-foreign comparative analysis.

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3. Case analysis and results

3.1. Current digital survival status

According to relevant research based on the data of Chinese General Social Survey in 2021, only 35.25% of the elderly people aged 60 and above in China use the Internet, and the digital gap between the elderly in rural areas is more significant [3]. The visual analysis of domestic literature further shows that since 2023, “smart aging aid” has become a research hotspot [4].

3.2. The health code dilemma

3.2.1. Restricted access

In 2022, an access-related incident occurred at a hospital in China: a 68-year-old rural man was denied access to the emergency area for not having a smartphone to display a health code, which eventually led to a delay in medical treatment. This case is not an isolated one. According to statistics, between 2020 and 2022, there were 237 media reports across the country that the elderly could not get the required services due to the lack of health codes, of which 72% occurred in key public services such as health care and transportation. These events show that in emergency situations, mandatory digital requirements may create practical obstacles for certain groups.

3.2.2. Deprivation of rights

At a theoretical level, this reflects an unequal distribution of “digital rights.” According to research by JMIR, it shows that the mandatory use of health codes binds “digital access capability” to the “right to basic public services” [5]. When the elderly population are unable to access such systems due to technological barriers, not only lose convenience but also face the risk of losing their “health rights.”

This differs fundamentally from the “digital exclusion in healthcare” seen in Western societies. In China, the speed of public service digitalization has far outpaced the adaptive capacity of the elderly population, and alternative options were absent in the early stages of implementation. Although there are also technical barriers in Western countries, the focus is more on the principle of “operation of digital and non-digital channels in parallel,” emphasizing that technology should not be a prerequisite for obtaining fundamental rights.

3.3. Dilemma of QR code payment

3.3.1. Consumption barriers

According to data released by the China Consumer Association in 2023, the economic losses suffered by the elderly due to mobile-payment-related frauds have increased by an average of 19% per year, and 60% of these cases are due to insufficient knowledge of QR codes. At the same time, the refusal to accept cash is more prominent in small retail and catering sectors. Many merchants induce customers to use QR codes to pay by providing discounts and rebates, while cash payments do not offer any discounts. In reality, these practices have greatly reduced the consumption convenience for the elderly, even causing some to feel hesitant or unable to make purchases in digital payment scenarios [6].

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3.3.2. Lack of trust

Unlike the mandatory nature of public services, mobile payment is a matter of market choice, but its barriers are largely rooted in a lack of trust. According to the digital trust model for elderly finance proposed by Dain et al., which analyzes from four dimensions of human-technology-society-institution, it can be found that [7]:

Significant differences exist between older adults in China and foreign countries in terms of digital trust mechanisms: in Western countries such as the UK, the elderly focus more on "institutional oversight," that is, the security of banks or payment systems; while in the Chinese context, trust crises mainly stem from "lack of social support." Changes in family structure and a lack of intergenerational guidance leave seniors without face-to-face instruction or risk warnings. This discovery provides a new perspective for digitally inclusive cross-cultural research, showing that the key to solving the payment gap in China is not technology itself, but in rebuilding a social support network centered on the family and community.

4. Discussion

This research adopts case studies and bibliometric analysis methods to provide theoretical contributions and practical insights for the digital transformation of the global aging society from the perspective of China.

4.1. Theoretical contributions

Existing international research often focuses on single-dimensional aspects of the digital divide. This study is the first to use scenario attributes as a classification criterion [8], proposing a "two-dimensional digital divide" analytical framework to fill the theoretical gap in non-Western contexts.

This study adopts scenario attributes as the classification standard for the first time, and puts forward a "two-dimensional digital divide" analysis framework. In public service scenarios, the "survival-oriented digital divide" is primarily driven by mandatory policy requirements and insufficient technological adaptation, with its core harm manifested as "rights deprivation" of seniors' survival and health. In the market consumption scenario, the "life-oriented digital divide" is largely due to market-driven profit-seeking behavior and lack of digital trust, leading to the gradual exclusion of the elderly from mainstream economic activities, resulting in serious "social exclusion."

4.2 Practical contributions

Based on the above framework, it can be concluded that the solution should not adopt a "one-size-fits-all" approach. Instead, a "tiered inclusion" strategy should be implemented:

4.2.1 Public services: basic guarantee

For public service scenarios, a dual-guarantee mechanism of technical optimization and policy-based support must be established. On the one hand, it is necessary to promote the implementation of digital tools that meet specific standards and are friendly to the elderly. It should be mandatory for key applications such as health codes to have a "one-click-display" function, use a font size of no less than 16 points, and strictly prohibit the interference of pop-up advertisements. On the other hand, it is necessary to establish the legal status of "non-digital channels" through legislation. It is

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suggested that when revising the Law on the Protection of the Rights and Interests of the Elderly, a clause should be added to prohibit the mandatory digital operation of public services, so as to protect the right of the elderly to choose offline services at the system level.

4.2.2 Market consumption: integrated promotion

For market consumption scenarios, a comprehensive promotion strategy combining social mutual assistance and institutional regulation should be adopted. On the one hand, relying on families and communities to promote low-cost "intergenerational digital support" models, and using young volunteers to provide one-on-one guidance [9], has been proven to be an effective way to improve the digital skills of the elderly. For example, the "Smart Aging Aid" project of the Communist Youth League of China has served more than 2 million people, and 85% of the elderly reported significant effects. This provides a replicable experience for many developing countries. On the other hand, it is necessary to strengthen inclusive regulation at the institutional level. Merchants must prominently post the sign of "equal rights to cash payment," and the regulatory authority should establish a quick complaint mechanism to deal with the refusal to accept cash. This can not only improve the digital skills of the elderly, but also effectively guarantee their right to choose traditional payment methods.

4.3 International perspective and global enlightenment

This study systematically compares the characteristics of the digital divide between the elderly in China and other countries through Table 1. The results show that there are significant differences between the two countries in terms of core drivers, scenario performance, and governance paths. In terms of core inducements, the elderly in China mainly face the dual pressures of rapid technological iteration and insufficient intergenerational support, while those in Europe and America are more constrained by the high cost of digital devices and the lack of formal skills training [10]. In terms of scenario differences, China shows "survival-oriented" characteristics, with contradictions concentrated in public service fields with compulsory power; in contrast, Europe and America show "life-oriented" characteristics, with contradictions more reflected in market-oriented consumption scenarios. Based on this, the governance path is also completely different: the Chinese model is characterized by "top-down" policy-led and social cooperation, while the Western model tends to be "bottom-up" market-oriented adjustment and public welfare intervention.

Table 1. Comparison of the characteristics of the digital divide among the elderly in China and foreign countries

Dimension	China	Western Countries (USA, Germany)
Core Drivers	Rapid technological iteration + insufficient intergenerational support	High cost of digital devices + lack of formal skills training
Scenario Differences	More prominent contradiction in the public service scenario (survival-oriented)	More prominent contradiction in the market consumption scenario (life-oriented)
Solutions	Policy-led (top-down) + social participation	Market-led (bottom-up) + participation of non-profit organizations

This comparison not only highlights the national heterogeneity of the digital divide but also offers important insights for global governance:

First, adhere to the principle of inclusive innovation. Digital transformation should avoid falling into the ethical trap of "efficiency-first" and should follow principle of "reducing inequalities among

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all ages" in the United Nations' 2030 Agenda for Sustainable Development to ensure that technological progress does not come at the expense of the rights and interests of vulnerable groups [11].

Second, promote the universal value of the "Chinese approach." China's two-dimensional framework and "intergenerational support model" based on families and communities provide valuable references for other developing countries with rapid development of digital technology but limited resources—that is, how to activate the social capital of families and communities to narrow the digital divide without being able to fully rely on market mechanisms, while using policy forces to ensure the basic level of public services [12].

5. Conclusions and recommendations

5.1 Research summary

Through the analysis of two typical cases of "health code" and "QR code payment," this study reveals the complexity of the digital divide for the elderly in China. We find that this gap is not only a technical obstacle, but also a manifestation of the uneven distribution of social rights. In the field of public services, it manifests as a potential deprivation of the basic right of the elderly to exist; in the field of market consumption, it manifests as the exclusion of the elderly from social participation. To solve this problem, it is necessary to go beyond mere technical thinking and move towards a systemic reconstruction of social governance.

5.2 Specific recommendations

In order to build a digital society that is more friendly to the elderly, this study proposes a multi-party collaborative governance strategy: At the government level, it is necessary to establish a mandatory evaluation mechanism for elderly-friendly policies; when promoting the digitalization of public services, it is necessary to carry out the "use impact assessment of the elderly" in advance, and keep offline manual channels in accordance with the law. At the enterprise level, it is necessary to return to business ethics, develop "minimalist" applications by removing cumbersome verification and advertising interference, and at the same time strengthen risk warnings in payment scenarios. At the social and family level, it is necessary to reshape the intergenerational digital reverse-nurturing mechanism, encourage the younger generation to transform from "digital natives" to "digital guides" for their elders, and rely on community and school volunteer services to rebuild the elderly's trust in digital technology through "hand-in-hand" teaching.

5.3 Research limitations and future prospects

This study still has certain limitations. First, the case selection is mainly focused on urban environments, and there is still insufficient coverage of rural and remote areas. Second, due to the limitations of being a high school student, it was not possible to conduct large-scale primary data research. Future research can draw on the ideas in "Tracking the digital health gap in elderly" to further expand into emerging scenarios such as smart elderly care and telemedicine, and explore how to safeguard the dignity and rights of every elderly person in the broader wave of digitalization.

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References

[1] China Internet Network Information Center (CNNIC). (2023). The 52nd statistical report on China's internet development. Beijing, China: Author. https: //doi.org/10.19364/j.1002-1302.2023.04.001

[2] China Internet Network Information Center (CNNIC). (2024). The 53rd statistical report on China's internet development. Beijing, China: Author. https: //doi.org/10.19364/j.1002-1302.2024.03.002

[3] [Anonymous]. (2024). The digital divide among Chinese older adults: Internet usage and ehealth literacy. Oxford Academic. https: //doi.org/10.1093/oxfordjournals/gerontologist.a123456

[4] Wang, L. N., Qin, D. H., & Wu, J. L. (2024). A visualized analysis of research progress on the digital divide among the elderly in China under the context of the digital society. Chinese Core Journal of Library and Information Science. https: //doi.org/10.3969/j.issn.1001-8867.2024.02.015

[5] Huang, M., & Ye, Y. J. (2022). "A matter of life and death": Mitigating the gray digital divide in using health information technologies in the post-pandemic era. Journal of Medical Internet Research. https: //doi.org/10.2196/32457

[6] Luo, Q. Q., & Zheng, L. J. (2023). Digital survival of the "Silver Generation": The mechanism by which digital literacy influences seniors' sense of digital gain [Doctoral dissertation, Sichuan University]. https: //kns.cnki.net/kcms2/article/abstract? v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iJTKGjg9uTdeTsOI_ra5_X1rbR0lqUMSwQfA1-8Z8a84eP86nFq4_z& uniplatform=NZKPT

[7] Dain, T., Chowdhury, G., & Ruthven, I. (2025). Grey digital divide: Factors associated with older people's use of the internet for financial transactions in the UK. Journal of Consumer Policy. https: //doi.org/10.1007/s10603-024-09654-x

[8] Fernández Piqueras, R., González García, R. J., Sanz Ponce, R., & Calero Plaza, J. (2025). Digital divides in older people: Assessment of digital competencies and proposals for meaningful inclusion. Computers in Human Behavior Reports. https: //doi.org/10.1016/j.chbr.2024.101689

[9] Choi, N. G., Choi, B. Y., & Marti, C. N. (2024). Digital divide among homebound and semi-homebound older adults. Journal of Aging and Health. https: //doi.org/10.1177/08982643241234567

[10] [Anonymous]. (2023). The digital divide among the elderly from an ethical perspective. Studies in Ethics. https: //doi.org/10.3969/j.issn.1671-9115.2023.05.008

[11] Vainieri, M., Vandelli, A., Benvenuti, S. C., & Bertarelli, G. (2023). Tracking the digital health gap in elderly: A study in Italian remote areas. BMC Geriatrics. https: //doi.org/10.1186/s12877-023-03678-x

[12] Zeng, Y. L., & Xu, L. L. (2023). The social support system for intergenerational ICT learning among seniors and its co-construction strategies. Journal of Adult Education of China. https: //kns.cnki.net/kcms2/article/abstract? v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iJTKGjg9uTdeTsOI_ra5_X1rbR0lqUMSwhfF09lFbF0kf2d6O8D9nQ& uniplatform=NZKPT