

Bridging the Digital Divide: The Collision and Integration of Media Intelligence and Age-friendliness in the Context of Aging

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Abstract. With the aging of the global population, the integration between media intelligence and age-friendliness becomes particularly important. Media intelligence, through technological means such as big data and cloud computing, enables personalized contents delivery and intelligent interaction. However, these advanced technologies often deviate from the usage habits and needs of the elderly. Older people may be unskilled in using smart devices, feel overwhelmed by information overload, and have concerns about privacy protection. Therefore, it is necessary to find a balance point in the collision between media intelligence and through technological means such as big data and cloud computing so that media intelligence can better serve the elderly. This paper aims to explore the collision and integration of media intelligence and age-friendliness in the context of aging and proposes corresponding strategies to bridge the digital divide.

Keywords: digital divide; aging; media intelligence; age-friendliness.

1. Introduction

In today's rapid development of digitalization, the elderly are faced with the growing problem of the digital divide. While the development of media intelligence has brought convenience to information dissemination, for the elderly, the complexity of its use and information overload have become obstacles for them to integrate into the digital society. With the advent of an aging society, the digital divide has become increasingly prominent among the elderly. The digital divide, i.e. the gap between different social groups in terms of access to and use of information technology, has particularly pronounced impacts on the elderly. These include various aspects such as technology access challenges, information acquisition barriers, communication and exchange difficulties, unequal access to services, health management challenges, risks of social isolation, risks of economic marginalization, and social integration difficulties. To improve the living conditions of the elderly, we need to pay attention to and take measures to address these digital divide issues, ensuring that the elderly can fully enjoy the convenience and fruits of the information-based society. Therefore, studying the integration of media intelligence and age-friendliness is of great significance in bridging the digital divide and promoting the social participation of the elderly. The media need to pay more attention to the needs and characteristics of the elderly and provide information and contents that are more in line with their preferences, while at the same time focusing on the experience and privacy protection of the elderly in order to better serve them.

2. The concept of digital divide

2.1. Basic concepts

The digital divide is a multidimensional concept that involves technology access, information acquisition, knowledge application, digital skills, socio-economics, regional development, group exclusion and policies and regulations. In order to narrow the digital divide, it is necessary for governments, enterprises and all sectors of society to work together to promote the popularization and application of digital technologies and to enhance the digital literacy and innovation capacity of society as a whole [1].

2.2. The main manifestations

(1) Technology access gap

The primary manifestation of the digital divide is the technology access gap, which refers to the differences in access to and use of information technology by different social groups and individuals. Such differences may stem from a variety of factors, such as geographic location, economic capacity, level of education and so on. In the digital age, the lack of stable and high-speed internet access and advanced information technology equipment often results in marginalization, preventing individuals from fully enjoying the convenience brought by digitization [2].

(2) Unequal access to information

Unequal access to information is another important manifestation of the digital divide. There are significant differences in the quantity, quality and speed of access to information among different population groups. This inequality may lead to an unequal distribution of information resources, leaving certain groups at a disadvantage in accessing critical information.

(3) Differences in knowledge application

Differences in knowledge application refer to differences in translating digital technologies and information into practical applications and productivity. Such differences may stem from differences in individual skills, knowledge reserves and innovation ability. People who lack digital skills and a sense of innovation may be unable to fully utilize digital technologies for personal and social development.

(4) Digital skills gap

Digital skills gap refers to differences in people's ability to master and use digital technologies. This disparity not only affects the life and work of individuals in the digital age, but also has a direct bearing on the competitiveness and innovation capacity of countries. Digital skills gap may lead to further widening of the digital divide. Digital skills gap may also lead to group digital exclusion, which refers to the exclusion of certain social groups (e.g. the elderly, the disabled, ethnic minorities, etc.) from digital technologies and information services. These groups may be unable to fully enjoy the benefits of digitization for various reasons (e.g. age, physical condition, cultural background, etc.), further exacerbating the digital divide.[3]

(5) Socio-economic impacts

The socio-economic impacts of the digital divide are far-reaching. For one thing, the digital divide may exacerbate social inequality and further marginalize disadvantaged groups. For another, it may also impede the digital transformation and innovative development of the economy, affecting the overall competitiveness of the country. Additionally, there are significant differences in economic development, infrastructure development and policy support among different regions, leading to differences of popularization and application of digital technologies in different regions.

3. Aging Society

3.1. Characteristics of an aging society

An aging society is one in which the proportion of older adults aged 65 and above in the total population exceeds 7%, or the proportion of elderly people aged 60 and above in the total population exceeds 10%.[4] Here are the main characteristics of an aging society. First, the size of the elderly population is huge. With the progress of medical technology and improving living standards, people's life expectancy continues to extend, and the number of elderly people is gradually increasing. Second, the aging process has accelerated significantly; with the decline in fertility and the extension of life expectancy, the aging process is accelerating. Third, there is a significant difference in the aging level between urban and rural areas. The level of aging in urban areas is usually higher than that in rural

areas, because the fertility rate in urban areas is lower, and the medical and old-age care conditions are better. Fourth, the quality of the elderly population continues to improve, with the improvement of education level and the popularization of the concept of lifelong education, the quality of the elderly population is constantly improving. Fifth, the younger elderly population accounts for more than half of the elderly population. Compared with the older elderly population, the younger elderly population accounts for a larger proportion of the elderly population, and they are usually more likely to continue to participate in social and economic activities. [5]

3.2. Main impact of aging society

First, the growth of the elderly population will change the dependency ratio of the population (see Figure 1), and the increase in the dependent population will increase the burden of the working population. Secondly, aging will affect the improvement of labor productivity because the aging of the age structure of the labor force may lead to the imbalance of supply and demand in the labor market. At the same time, the acceleration of the aging process of the population is bound to lead to a significant rise in social security expenditure for the elderly, which poses a major pressure on government finance. Moreover, the aging of the population requires the adjustment of the existing industrial structure to meet the special needs of the elderly population for material and spiritual culture, which may bring new economic growth points and cause changes in family size and family structure, so that the function of family pension is constantly weakened, and more social support and services are needed. In addition, the aging society may also bring some other effects, such as the shortage of medical resources, rising medical costs, and insufficient elderly care facilities. Therefore, dealing with an aging society requires the joint efforts of the whole society, including formulating and implementing relevant policies, strengthening the construction of medical and elderly care services, and improving the quality of life for the elderly.

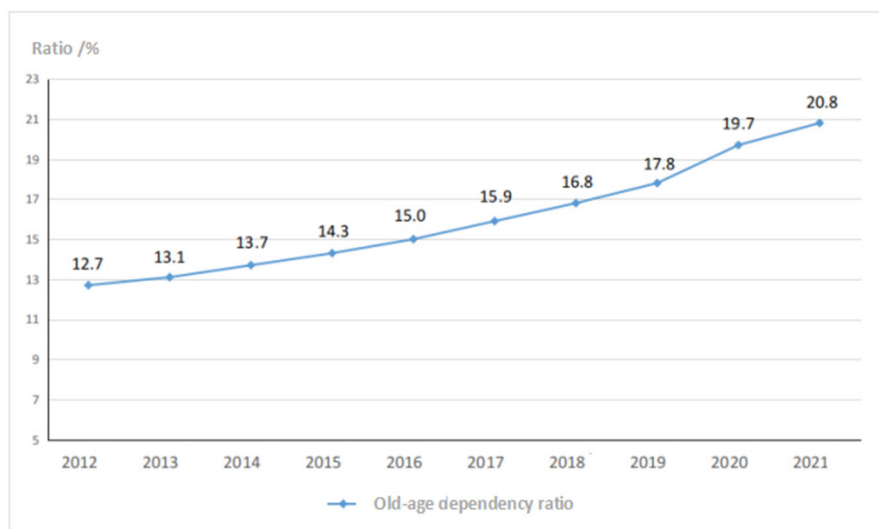


Figure 1. Old-age dependency ratio [6]

(Data source: National Bureau of Statistics)

3.3. Manifestation and impact of digital divide in aging society

At present, most of the elderly in China have not been able to make full use of the advantages of the Internet and reap the dividends of the digital age. Due to their disadvantages in physiological conditions, psychological conditions, educational level, socioeconomic status and other aspects, the elderly do not have enough opportunities to access and use various digital technologies, so they lack the understanding and mastery of digital technologies, and encounter many inconveniences in the process of using the Internet. In addition, at this stage, the design of smart products and services still lacks attention to the elderly group, and the large-scale development and production of smart phones and smart software suitable for aging still lacks. These subjective and objective factors make the

elderly face many difficulties when accessing the Internet and become "wanderers" in the Internet era. After accessing the Internet, the use of Internet functions by elderly netizens is still not comprehensive and skilled enough. It limits the improvement of the elderly's ability to use the Internet, which is shown as follows (see Figure 2).

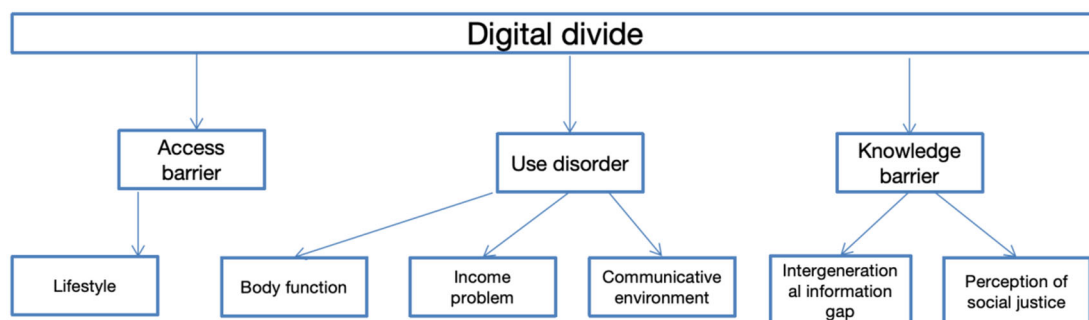


Figure 2. Manifestations of the digital divide in aging society

(1) Technical access problems

In an aging society, many elderly people are faced with the difficulty of accessing technology. Due to historical background and personal conditions, some elderly people have never touched modern information technology equipment such as computers and smartphones and feel unfamiliar and afraid of new technologies. This makes it difficult for them to access the Internet and use various technology products and services. The application of digitalization in health management is increasingly extensive, including telemedicine, intelligent monitoring, and so on. However, older people may not be able to take full advantage of these digital health management tools due to barriers in access to technology and information, thus increasing the difficulty of health management.

(2) Information access barriers

The Internet is an important channel through which modern society can obtain information, but the elderly may face obstacles in obtaining information. On the one hand, they may not be familiar with Internet search skills, and it is difficult to sift out really useful content from a huge amount of information. On the other hand, some elderly people may have degenerative sensory functions, such as vision and hearing, which affect their access to and understanding of information. The existence of a digital divide may also affect the social integration of older persons. In the digital age, every aspect of social life is closely linked to digital technology. If older people are unable to adapt to this change, they may feel excluded from society, making social integration more difficult.

(3) Communication and communication barriers

In the digital age, people increasingly rely on electronic devices to communicate and communicate. However, this can be a barrier for older people. They may not be familiar with modern communication methods such as social media and instant messaging tools, resulting in poor communication with family, friends and society. At the same time, social isolation is a concern in an aging society. Digital tools can provide new social channels for older people, but if they are not proficient in using these tools, they may instead exacerbate their sense of social isolation[7].

(4) Unequal use of services

Inequality in digital services also affects older people. Many public services and business services have been transformed to digital, and if the elderly do not know how to use electronic devices or network services, they may not be able to enjoy the convenience brought by these services, intensifying their marginalization in social life. In addition, with the popularity of digital transaction methods such as electronic payment and online shopping, elderly people who do not use these tools may face the risk of economic marginalization. They may not be able to enjoy the convenience and benefits brought by digital transactions and may even suffer financial losses as a result.

4. Contradictions and challenges between media intelligence and aging

4.1. New challenges posed by the aging society to media intelligence and appropriate aging

The aging society presents many new challenges to media intelligence and proper aging. According to the data, the share of people aged 60 and above among the total Internet population has also increased from 0.4% in 1999 to 11.2% in 2020. Despite the large increase, the figure is still low compared to the proportion of elderly people in the overall population. With the increasing proportion of the elderly population, the media needs to pay more attention to the needs and characteristics of the elderly in order to better serve them. First of all, media intelligence needs to pay more attention to the use experience of the elderly. The cognitive abilities and operating habits of the elderly are different from those of the young, so media intelligence should consider these factors and provide easy-to-use interfaces and functions to make it easier for the elderly to use media products and services. Secondly, aging media needs to pay more attention to the information needs and content preferences of the elderly. Elderly people also have different needs and ways of obtaining information from young people. They pay more attention to practicality and life, and they need information and content that are closer to their lives. Therefore, the media should provide information and content that is more in line with the tastes of the elderly according to their characteristics and needs so that they can better access the information they need. In addition, the aging society also requires the media to pay more attention to the privacy protection and security of the elderly in the process of intelligence and aging. The awareness of information protection of the elderly is relatively weak, and the media should strengthen information protection and security measures to avoid the disclosure or abuse of the personal information of the elderly.

4.2. The contradiction between media intelligence and proper aging

(1) The contradiction between technical complexity and ease of use

Media intelligence often involves complex technologies and algorithms, and the elderly may feel unfamiliar and intimidated by high-tech products and technologies. How to keep the media intelligent while making it easy for the elderly to understand and operate is a contradiction that needs to be resolved.

(2) The contradiction between information overload and accurate push

Media intelligence uses algorithms to analyze user behavior and preferences to push personalized information. However, for older people, too much information can cause them to feel confused and overwhelmed. Another contradiction that needs to be solved is how to avoid information overload while ensuring the accuracy of information push.

(3) The contradiction between data privacy and protection of the elderly

Media intelligence requires collecting and analyzing user data to provide better services and experiences. However, elderly people's awareness of data protection is relatively weak, how to collect and analyze data while ensuring the privacy rights of the elderly are not infringed is an important challenge, while promoting media intelligence, we need to fully consider the needs and characteristics of the elderly, and take appropriate measures to ensure that media intelligence can better serve the elderly. Improve their quality of life and social participation.

(4) The contradiction between traditional habits and emerging technologies

The elderly often have their own habits and ways of obtaining information, and media intelligence may break their traditional habits. How to guide the elderly to accept and adapt to new technologies while respecting their traditional habits is a major contradiction in the process of media intelligence and aging.

5. Suggestions on the collision and integration of media intelligence and adaptive aging under the background of aging

5.1. Strengthen intelligent technology research and development

In the context of aging, the development of media intelligence plays a crucial role in adapting to aging. In order to better serve the elderly, it is necessary to strengthen the research and development of intelligent technology. Through advanced technological means such as deep learning, natural language processing, and big data analysis, we will develop smart media products that are more suitable for the elderly to use, and improve the convenience of the elderly to obtain and use information. At the same time, the government plays an important role in promoting the integration of media intelligence and aging. Relevant policies and regulations should be formulated and improved to guarantee media intelligence and aging. At the same time, supervision and law enforcement should be strengthened to ensure the healthy development of intelligent and aging media[8].

5.2. Promote age-appropriate product design

Promoting age-appropriate product design is an important part of media intelligence. Media products should fully consider the physiological and psychological characteristics of the elderly, design easy-to-use, large font, color contrast interface, and function in line with the operation habits of the elderly. At the same time, diversified interaction methods such as voice interaction and gesture recognition should also be provided to meet the needs of different elderly people. In addition, media content supply is the core of media intelligence. In the context of aging, the media should pay more attention to the information needs and content preferences of the elderly, tailor for the elderly group, and push practical information and cultural entertainment materials that meet their daily life needs and aesthetic preferences. At the same time, the review and screening of content will be strengthened to ensure that the information that the elderly are exposed to is true, reliable and beneficial.

5.3. Improve user experience

User experience is an important index for measuring the integration effect of media intelligence and aging adaptability. The media should understand the use habits and feelings of the elderly through user feedback, data analysis, and other means, and constantly optimize products and services to improve the use experience of the elderly. At the same time, a sound customer service system should be established to provide timely and effective help and support for the elderly[9].

5.4. Strengthen cross-sectoral cooperation

The integration of media intelligence and aging requires cross-field cooperation and support. Media organizations should strengthen cooperation with enterprises and institutions in the fields of science and technology, medical care, education, etc., to jointly develop and promote smart media products and services suitable for the elderly. Through cross-field cooperation, we can achieve resource sharing and complementary advantages, and promote the deep integration of media intelligence and aging.

5.5. Promote education and training

Education and training is an important way to improve the intelligent media literacy of the elderly. Media literacy education for the elderly should be strengthened, and training courses and educational videos should be conducted to help the elderly understand and master the methods and skills of using smart media products. At the same time, family members and social volunteers are encouraged to participate in the media literacy education of the elderly, and a good atmosphere of common concern and support from the whole society is formed[10].

5.6. Strengthen social publicity and popularization

Social publicity and popularization are important means of enhancing the integration effect of media intelligence and aging. We should strengthen the publicity and popularization of media intelligence and age through media channels, community activities, public service advertisements, and other ways. Improve the elderly's awareness and acceptance of smart media products, and enhance their confidence and willingness to use smart media products. At the same time, all sectors of society are encouraged to actively participate in and support the integrated development of media intelligence and aging, and jointly promote the deep integration and development of media intelligence and aging under the background of aging.

6. Conclusion

The integration of media intelligence and age-appropriate is the key to bridging the digital divide and promoting the social participation of the elderly. By simplifying the operation interface, providing customized content, strengthening privacy protection, promoting intelligent auxiliary devices, and carrying out training and education strategies, we can promote the deep integration of media intelligence and aging and help the elderly better integrate into the digital society. With the continuous development of technology and the intensification of the aging trend, the integration of media intelligence and aging will face more challenges and opportunities. Future research could further explore how this integration process can be driven through technological innovation and policy support to achieve a more inclusive and sustainable digital society.

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