

Telecommunications Regulation in the Post-5G Era: Bridging the Digital Divide

-- A Perspective Based on the Elderly

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Abstract: The ongoing digitalisation of society has led to a growing disparity between the digitisation of life and the ageing of the population. This has resulted in a significant number of elderly individuals becoming disadvantaged in the digital age. The issue of how to assist the elderly in crossing the "digital divide" has therefore become a crucial concern. In the context of an ageing society and the advent of the post-5G era, it is of practical significance to discuss the regulation of the telecommunication industry in order to eliminate the digital divide of the elderly. This paper proposes corresponding measures from the perspective of telecommunication regulation in the post-5G era to bridge the digital divide for the elderly and provide systematic and scientific support for the promotion of fair social development.

Keywords: Telecommunications Regulation, Post-5G Era, Digital Divide

1. Introduction

The most recent data from the National Bureau of Statistics' Seventh National Population Census, conducted in 2020, indicates that as of November 1, 2020, the total population of China was 1,411.78 million. The population was distributed as follows: 253.38 million individuals aged 0-14, 967.76 million individuals aged 15-64, and 190.64 million individuals aged 65 and above. These figures represent 17.95%, 68.55%, and 13.50% of the total population, respectively. This data unquestionably indicates that China has entered an aging society. According to the predictions of scholars such as Zhai Zhenwu [1], the process of population aging in China will continue to accelerate, reaching its peak in this century by 2058. The advent of an ageing society has led to the emergence and deepening of a number of problems, including a decreasing labour force, increasing social burdens, mismatches in social and cultural welfare, and the widening digital divide. Among these issues, the accelerated development of fifth-generation communication technology has highlighted the problem of the digital divide as society enters the post-5G era. In light of the challenges posed by an ageing society and the advent of the post-5G era, it is imperative to consider how to regulate the telecommunications industry to eliminate the digital divide for the elderly.

The term 'digital divide' was first proposed by American media reports and government announcements in the 1990s, denoting the discrepancy between those who have access to technology and those who lack it. The term is open to different interpretations and explanations from various scholars. There is considerable diversity of opinion among scholars as to the meaning of the term. In this paper, we adopt the interpretation of Liu Zhifen [2] as presented in his article on the current situation of China's digital divide and its countermeasures. This interpretation posits that the digital divide can be understood as the unbalanced development of information network technology and its application, as represented by the Internet, in countries around the world, as well as between different regions and different social strata

within a country. In light of this understanding, we propose that the digital divide in old age can be understood as a significant disparity in the degree of ownership and utilisation of information technology between the elderly, the middle-aged and the young. This is due to a number of factors, including technological constraints, system limitations, cultural norms and the elderly themselves. Ultimately, this leads to a substantial information gap.

At the national level, the state has also issued many policy documents to eliminate the digital divide for the elderly, such as on 24 November 2020, the General Office of the State Council issued the Implementation Plan on Effectively Solving the Difficulties of the Elderly in the Use of Intelligent Technology, which pointed out that by the end of 2021 [3], the elderly will be able to enjoy intelligent services by focusing on high-frequency issues and service scenarios, such as elderly travel, medical care, consumption, recreation and entertainment, and office work. By the end of 2022, the level and convenience of intelligent services for the elderly will be greatly improved, online and offline services will be more efficient and coordinated, and a long-term mechanism for solving the problem of the "digital divide" faced by the elderly will be basically established. General Secretary Xi Jinping has also emphasised the importance of bridging the digital divide on several occasions: "Strengthen digital infrastructure and capacity building, improve access to the digital economy, bridge the digital divide and allow members at different stages of development to share the fruits of digital economic development."

At the industry level, the telecommunications industry has also launched a series of initiatives to eliminate the digital divide in old age, such as by the end of 2020, the three major telecom operators have launched the seven major service initiatives such as Love Direct, Love Counter, as well as Love Agency and other exclusive services such as helping the elderly packages, door-to-door service, large print bills, 114 taxi and other services.

This paper will attempt to propose regulatory measures for the telecom industry from the perspective of telecom regulation in the post-5G era, with a view to bridging the

digital divide for the elderly and, ultimately, providing systematic and scientific support for the promotion of equitable social development.

2. Three Digital Divides

Lu Jiehua [4], in his article Analytical Framework, Concept and Its Path Choice of Elderly Digital Divide Governance-Based on Digital Divide and Knowledge Gap Theory Perspectives, divides the generation mechanism of digital divide into three channels. The first digital divide is the access divide, the second digital divide is the usage divide, and the third digital divide is the knowledge divide.

The access divide refers to the gap in the conditions for different people to access the Internet at the material level. The access divide mainly reflects the inequality of material access based on economic and social development and is mainly influenced by national economic strength, government decisions, network infrastructure construction and information technology standards and norms. Older people, as a group with lower socio-economic status, have experienced a widening of the access gap compared to the rest of the population. Some low-income elderly groups, with limited knowledge of network technology, are unable to keep up with emerging technological changes. According to relevant data, the size of China's elderly internet users aged 60 and above reached 119 million in December 2021, with an internet penetration rate of 43.2%. The Internet penetration rate of the elderly population is relatively low compared with other groups, and at the same time, although it has increased in some areas, the growth rate is much lower than expected. Among them, the penetration rate is even lower in remote rural areas. The reason for the low rate of Internet use among the elderly population is partly due to the weakness in the construction of Internet infrastructure in rural and remote areas, where the infrastructure that can be used by the elderly group is even more sparse, and the elderly population has problems in understanding and using the facilities, such as the lack of information, which makes it difficult for them to grasp some of the facilities.

The use gap refers to a situation of structural differences in digital skills and use, where people do not use the Internet in exactly the same way and to the same extent under the same conditions of the access gap, i.e. with the same hardware access conditions. Take the widely used software WeChat, for example, according to data from the article "My Old Domain: WeChat Life for the Elderly and Family WeChat Feedback" [5] published by the Tencent Research Institute in 2018, the average time that elderly people use WeChat every day, the number of functions they have mastered, and the number of their WeChat friends are significantly lower than those of middle-aged and young people. In terms of specific function usage, the study data shows that older people's use of WeChat is clearly stratified-social > information > payment: the percentage of older people who can use social functions is around 85%, the percentage of older people who can use information functions has dropped to 65%, and the percentage of older people who can use payment functions has dropped again to 50%. At the same time, both young and middle-aged people use more than 90% of these functions. This gap in usage is due to a number of factors, including cultural factors such as stereotypes of older people as conservative and old-fashioned. The presence of unfavourable cultural factors not only makes older people suspicious of themselves and less motivated to try new things, but also makes the telecoms

industry and other industries tend to ignore the needs of older people when designing products and services. The existence of the usage gap limits the timeliness of information access for older people, affects the perception of risk for older people, and greatly increases the threshold for older people to participate in network activities.

The knowledge gap refers to the differences in the final acquisition of knowledge between different social groups due to differences in Internet access, use and skills, i.e. the information resource and knowledge divide in the digital age, and is an issue that needs more attention in the future. Older people have less access to the Internet, use it in a monotonous way and do not have a firm grasp of skills, resulting in lower knowledge acquisition. Compared to non-elderly groups, older people are more likely to be victims of online risks such as online fraud. According to the 2018 Middle-aged and Elderly Internet Status and Risk Network Survey Report, more than half of elderly people have experienced online rumours and false advertisements, with percentages as high as 66.2% and 52.7%, respectively, and the number of elderly netizens who have encountered online fraud and vulgar pornographic undesirable information has also reached 37.4% and 29.4%, respectively. At the same time, according to data from Tencent Research Institute in 2018, compared with young internet users, middle-aged and elderly internet users are extremely vulnerable to online fraud. Nearly one-third of elderly Internet users have encountered medical fraud, red package fraud and lottery winning fraud, and more than 10% of elderly users have encountered network marketing, financial fraud and illegal fundraising, imitation of prosecutors and lawyers, and online shopping fraud. The existence of the knowledge gap contributes to older people's discomfort with information.

3. Fundamental Principles and Core Concepts for Managing the Digital Divide among the Elderly

3.1. Fundamental Principles for Managing the Digital Divide among the Elderly

First, the management of the digital divide in old age should always adhere to the basic principle of people-centredness, so that the development of science and technology can truly serve the comprehensive and sustainable development of the people. Since the 18th CPC National Congress, General Secretary Xi Jinping has repeatedly stressed that the development of China's network business should adhere to the value attitude and practical principle of "people-centred", and proposed "adhering to people-centredness and striving to build a universal and inclusive society of happiness". "Take the improvement of people's well-being as the starting point and end point of the development of informatisation, so that people can have a greater sense of gain, happiness and security in the development of informatisation". Under the macro background of the increasingly severe ageing of the population and the rapid increase in the level of development of the information society, the problem of the digital divide among the elderly in China presents a diversified and complex situation, and in order to effectively bridge the digital divide among the elderly, it is necessary to pay attention to the fundamental interests of the elderly group and establish a perfect digital divide governance system based on

the coverage of the whole population.

Second, the management of the digital divide among the elderly should always adhere to the principle of balancing technical efficiency and social benefits, and establish a long-term mindset of balancing technical efficiency and social benefits. The problem of the digital divide in old age essentially reflects the contradiction between the pursuit of development speed and development efficiency during the period of social transformation. Therefore, the governance of the digital divide in old age must emphasize the importance of regulating and balancing the core interests of the present and the long term, the universal and the specific, the part and the whole, as well as different groups, with a view to long-term and comprehensive intervention and governance of the digital divide. It should adhere to the "digital bottom line thinking" and not pursue the comprehensive promotion of digital technology across the board and reduce the provision of offline services in a one-size-fits-all manner.

Third, the governance of the ageing digital divide should not jeopardise consumer welfare or undermine economies of scale. In the process of governance, the creation of subsidiaries due to the new infrastructure should not lead to a reduction in the size of the company, which in turn leads to the loss of economies of scale, rising costs and reduced consumer welfare. The governance process should strike a perfect balance between addressing the digital divide in old age and protecting the welfare of remaining consumers.

3.2. Core Concepts for Managing the Digital Divide Among the Elderly

First, participatory governance. The main causes of the digital divide in old age include not only the micro-level factors of the elderly themselves, but also the macro-level social, institutional, technological and cultural factors. Therefore, the governance of the digital divide in old age should adopt the concept and mode of participatory governance, establish a multi-dimensional co-governance pattern involving the government, market/enterprise, society/community, families, individuals and other subjects, and give full play to the leading and supervisory role of the government in the governance of the digital divide in old age.

Second, inclusive governance. Eliminating the digital divide in old age should not jeopardise the interests of other consumers. At the same time, governance should fully take into account the individual differences of the elderly group and treat them separately according to their personal situation. As different generations in the digital age have different levels of digital thinking, mastery of digital skills and integration into digital life, how to balance the relationship between the young, middle-aged "fast walkers" and the elderly "slow walkers" has become an important proposal for bridging the digital divide. Inclusive governance of the digital divide in old age emphasises the full respect and protection of the basic needs and development requirements of all groups of people, including the elderly, and the creation of a pluralistic and inclusive society that is more humanistic and fairer. On the one hand, promoting the in-depth development of digital technologies, continuously improving the well-being of all people, including the elderly, through the full application of smart technologies, and effectively accelerating the progress of mastering the elderly population through the empowerment of technologies such as 5G, blockchain and the Internet of Things (IoT), so as to provide a certain foundation for the elimination of the elderly digital divide; on the other hand,

preserving the traditional service methods that the elderly are familiar with, and providing more convenient, safe and effective services to the elderly. Optimising traditional services and innovating digital services go hand in hand, improving the accessibility of social and public services and providing richer personalised and tailored intelligent services go hand in hand, focusing on the stage of building a digital society and the hierarchy of needs of the elderly population, and empowering the "fast walkers" and "slow walkers" with freedom of choice and development. We should give the right of free choice and free development to both "fast walkers" and "slow walkers", and build a more elastic, flexible, inclusive and adaptable governance mechanism for the digital divide among the elderly, as well as an age-friendly and intergenerational harmonious social environment.

Third, all-encompassing governance. The governance of the digital divide in old age should be all-population, all-age, all-region and all-encompassing. First of all, we should pay attention to the whole population and consider the development of digital thinking and skills for the whole age group and the whole regional population as the basic strategy for the governance of the digital divide in old age. At the age level, the governance of the digital divide should be pushed forward, emphasizing the cultivation of digital thinking starting from the younger generation and strengthening the in-depth cultivation of digital skills for the middle-aged group. At the regional level, it is necessary to gradually narrow the gap between urban and rural areas and the imbalance in the development of digital technology among regions. Second, starting from the actual needs of the elderly groups, it is necessary to cover a wide range of areas and formulate governance programmes in various fields around the basic issues and service scenarios of the elderly groups' daily lives, such as travel, consumption, medical care, pension, recreation, errands, and participation in public affairs, so as not to leave any dead corners in governance. On the one hand, it adheres to the combination of universal application and categorization, strengthens problem orientation and demand orientation, and adopts various solutions to common and individual problems of the digital divide; on the other hand, it adheres to the combination of solving outstanding problems and building a long-term mechanism, focusing on the high-frequency service issues of the elderly, such as travel and medical care, and giving priority to ensuring the basic needs of the elderly's lives, and also gradually building a long-term mechanism to enrich the field and scope of intelligent services and improve the level of intelligent services. It is also necessary to gradually establish a long-term mechanism to continuously enrich the field and scope of intelligent services, and improve the level and quality of intelligent services.

Fourth, sustainable governance. Sustainable governance of the digital divide for the elderly mainly involves two aspects: one is to pay attention to the sustainable development of the elderly themselves. The development of science and technology provides entirely new opportunities and possibilities for the empowerment of the elderly, and should promote the close integration of the new round of scientific and technological revolution, represented by the mobile Internet, big data, artificial intelligence, etc. with the concepts of healthy aging and active aging, and pay attention to the important role of science and technology in maintaining and promoting the performance of the functions of the elderly, so as to ensure that all the elderly have the opportunity to live a decent and dignified life on the basis of their age, ability to

adapt to and participate in social progress, and sharing of digital dividends, gradually expanding from meeting the basic needs of the elderly to meeting their development needs, and promoting the building and sharing of an ageing society. Second, attention should be paid to the sustainable development of intergenerational and generational change. Taking digital feedback at the social and family level as an important channel, the younger generation should be encouraged to provide feedback to the older generation in terms of new media skills and knowledge, as well as popular culture and values related to them, so as to form an "internal cycle" of digital culture transmission. Based on digital and cultural feedback, a new intergenerational family interaction, intergenerational social structure and intergenerational cultural transmission will be formed, effectively transforming the digital divide into digital opportunities and digital dividends.

4. Digital Divide Solutions for the Elderly

4.1. Access Divide Solutions

First, the coverage of Internet infrastructure should be improved to ensure equity in information technology. The government should take measures to ensure the coverage of Internet infrastructure in rural and remote areas so that the elderly can fully use and master Internet technology facilities and equipment. On the one hand, the government can make relevant regulations and provide a certain amount of subsidies to enterprises that iteratively upgrade Internet technology facilities in rural and remote areas. On the other hand, the government should take appropriate measures to control costs in the telecommunications industry and carry out projects to speed up and reduce charges. It should promote the popularisation and use of the Internet in rural and remote areas, reduce network tariffs, equipment costs and service fees, and create a fair, open and transparent market for the telecommunications industry, so as to provide affordable and accessible Internet infrastructure for the elderly. At the same time, with the iterative updating of technology, 5G technology, Internet of Things technology, artificial intelligence technology and big data technology can be used to explore new types of digital Internet services, especially those applicable to the elderly, to provide creative solutions for the ageing society that has already arrived.

4.2. Using Divide Solutions

Bridging the digital divide in old age should be considered not only in terms of the access gap, but also in terms of the usage gap. The solution to the usage gap is mainly to rely on telecommunications companies to popularise the knowledge of the elderly group and maintain traditional service methods. On the one hand, the Ministry of Industry and Information Technology (MIIT) should continue to focus on the characteristics and needs of the elderly group and speed up the implementation of various policies. It should grasp the implementation of the special action and guide the first 158 websites and mobile APPs to complete the transformation and evaluation on schedule. Meanwhile, it has strengthened supervision and guidance throughout the country, promptly identified prominent problems and weaknesses, solved difficulties encountered in the use of smart technologies by the elderly, and established a long-term solution mechanism. Evaluate the effectiveness of policies in a timely manner,

summarise the experiences and practices that can be replicated and scaled up, form a batch of landmark results, actively promote popularization, and actively respond to social concerns. The government should clarify the number of training sessions conducted by telecom enterprises, and open training sessions and interest classes on the use of digital products for the elderly; for communities with more elderly people, they can be conducted by community workers, and encourage college student volunteers to go into the community or give on-site lectures to teach the elderly how to use digital products one-on-one and hand-in-hand, and patiently teach the elderly how to use the intelligent devices, so that the elderly can learn to use them now. On the other hand, telecommunications companies should take the lead in reasonably maintaining traditional service methods. In high-frequency service areas such as public transportation, medical care, social security, civil affairs, finance, telecommunications, postal services, letters and visits, immigration, and life payment, they should maintain offline service channels, adequately staff guidance personnel and on-site reception windows, promote "one-stop" services, and reduce unnecessary procedures, so as to ensure that the elderly who lack basic knowledge of mobile phones and the Internet can also receive basic public services. Ensure that the elderly who lack basic knowledge of mobile phones and the Internet can also receive basic public services, fully embodying the inclusiveness of public services and the goodwill and warmth of public policies.

4.3. Knowledge Divide Solutions

The telecommunications industry should take the lead in disseminating information to promote age equality, eliminate age discrimination and promote family support. Telecommunications companies should play an important role in disseminating information and publish more information advocating the elimination of misconceptions about and discrimination against older people and the repositioning of their social roles. They should play an important role in disseminating information to make the public understand that old age does not mean weakness, helplessness, ignorance and backwardness, and that older people are also capable of learning and mastering digital skills, integrating into the digital society and being important participants and contributors to social life. The telecommunications industry can provide relevant service experience positions for the elderly group and provide service assistance to the elderly group. At the same time, the telecommunications industry should organize professional personnel to take the initiative to help and assist the elderly people around them to learn Internet intelligence technology on a regular basis, and strengthen the organization, making it clear that industry practitioners should advocate and stimulate the learning momentum and positive attitude of the elderly to take the initiative to learn information technology and adapt to the information-based society, and help them increase their self-confidence, keep an open mind, and take the initiative to embrace a comfortable and convenient digital life.

5. Summary

An analysis of the current situation of the digital divide in China shows that the access gap, the usage gap and the knowledge gap are the main factors causing the digital divide, while the level of economic development is the most important factor affecting the digital divide, because both the

application of information technology and the ability of the people to receive information cannot be separated from the promotion of economic development. Therefore, in order to fundamentally solve the problem of digital divide in our country, we should take economic construction as the centre, substantially improve the level of economic development in our country, make the reduction and even elimination of the digital divide an important goal of the national development strategy, and take substantial and favorable measures in fiscal policy, infrastructure investment, education, high-tech innovation and application, etc., so as to lay a solid foundation for the fundamental elimination of the digital divide. The government should take substantial and favourable measures in terms of fiscal policy, infrastructure investment, education, high-tech innovation and application, so as to lay a solid foundation for the fundamental elimination of the digital divide. At the same time, the government should regulate the telecommunications industry according to the causes of the three levels of the digital divide: the access divide, the usage divide and the knowledge divide, with a view to bridging the

digital divide for the elderly, for which the telecommunications industry should be the main force.

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