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From Big Data to social governance: a discussion across the "double divide"

-- Empirical research based on mobile phone use of elderly migrant workers

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Abstract

The emergence of big data has brought the "double divide" dilemma of urban-rural divide and gray divide to the digital divide problem of the aging of migrant workers. In 2021, Chinese scholar Chen Yunsong published Big Data Vision of Humanities and Social Sciences from a Social Perspective. Based on the quantitative research theory at the individual level, this work observes, displays and analyzes macro social processes and human phenomena through massive data. Based on the gradually aging social structure of rural migrant workers in China, this paper focuses on the viewpoints of big data and social governance in Chapter 4 and Chapter 6 of the book, and conducts an empirical study on the "double divide" problem of mobile phone use of elderly rural migrant workers. The research results show that the differences between the elderly migrant workers in urban and rural areas in the willingness, skills and content of mobile phone use have changed, and mobile phone smart application has catalyzed their information differentiation and social stratification to a certain extent. The country needs to eliminate the negative impact caused by the gap pushed by the mobile phone big data algorithm in a variety of feeding ways, so as to effectively implement social governance measures.

Keywords

Big data, Social governance, A gulf, Elderly migrant workers, Mobile phone use.

1. Introduction

With China's growing reliance on big data technology, the "digital divide" has become one of the most important social divides of our time, and it is becoming more acute as technology continues to accelerate. The digital divide allows inequality to expand into the digital realm, making the existing inequality in the social realm play a more insidious form, and bringing about the crisis of social fragmentation. The "digital divide" provides an opportunity to recognize the inequalities that exist between the technologically rich and the technologically poor. [1] People understand this phenomenon of disparity inequality as the three divides of the digital divide, namely the access gap, the use gap and the knowledge gap. [2] Then, how to cross the "digital divide" and share digital welfare has become one of the challenges in the era of big data. The research field has also shifted from focusing on technology and social information inequality to focusing on digital information integration of urban and rural relations, and the scope of research has also shifted from conceptual elaboration to practical demonstration.

The author Chen Yunsong uses empirical research and social networks to examine the humanities and social science applications and achievements of big data: In 2010, Analyzing Society: Principles of Analytical Sociology proposed the use of middle-level theory to establish

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institutional explanations of social phenomena on the basis of individual actions. in 2015, in sociological research, The Deviation of Social Class Identity among Urban and Rural Residents in China was published. This paper makes a quantitative empirical analysis on the status quo and influencing factors of urban residents' subjective class status identity shift. In 2015, The Inequality Effect of Urbanization and Social Integration was published in the Chinese Social Sciences, which analyzed the inequality between "urban farmers" and "city people". It will promote the transformation of the old rural and urban second unit structure into a new binary division of urban residents and floating population, thus blocking the social integration in the process of urbanization. This finding helps us to understand the causes of social barriers in the current urbanization, and provides a possible theoretical and empirical reference for "new urbanization". In 2017, he published "Out of Fei Xiaotong's Paradox: In "Out of Fei Xiaotong's Paradox: On the Dispute of Sociological Methods", he claims that in the era of big data, any grand theory will face a "big test of data verification"; "The Big Data Perspective of Humanities and Social Sciences from a Social Perspective," published in 2021, Through massive data observation, display and analysis of a new, macro, multi-angle social process and human phenomena.[3]

What are the new social conditions of the digital divide in mobile phone use of elderly migrant workers from the perspective of big data? As of April 2022, the "2021 Migrant Workers Monitoring Survey Report" released by the National Bureau of Statistics shows that the average age of migrant workers is 41.7 years old, of which the proportion of migrant workers over 50 years old is 27.3%, an increase of 0.9 percentage points over the previous year, and this proportion has increased year by year since 2012. [4] The first generation of migrant workers is getting old, and this huge group has also become a digital refugee of the "double divide" by the "urban-rural divide" superimposed "gray divide". [5] On the micro level, this phenomenon seriously hinders the social integration of this group and the development of individuals and families, and on the macro level, it has become a new problem that puzzles solving the problems of "three farmers", rural revitalization and coordinated high-quality development of urban and rural areas. The differentiation of mobile phone big data algorithm push highlighted by the digital divide has seriously affected the lives of elderly migrant workers.

2. Double divide: the dispute brought by the aging problem of migrant workers

The digital age has undoubtedly brought a new environment and conditions to human society, and big data has been closely linked to the social behaviors of various groups. Especially during the epidemic prevention and control period, the huge influence of big data has been more fully reflected in the formulation and implementation of national epidemic prevention strategies from clothing, food, housing and transportation. Digitalization not only lays out the layout between producers and consumers, but also transfers power between the government and citizens, making it the ultimate goal under the guidance of social governance for members of society to share the dividends of digital development. The elderly migrant workers are actively or passively refugees in the digital society because of their inherent ideas, education, physical function, environmental exclusion and other factors. This "double gap" between gray groups, migrant workers and the modern information society runs contrary to the Party's pursuit of the socialist essence of people's supremacy and common prosperity, and the right of the elderly to "participate in social development and share the fruits of development" as conferred by the Law of the People's Republic of China on the Protection of the Rights and Interests of the Elderly. The digital era should not abandon any group, should rely on "digital technology empowerment and social governance in the field of multi-communication potential energy", bridge the digital

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divide, so that members at different stages of development to share the fruits of digital economy development. [6]

Therefore, based on the forward-looking perspective of the aging of migrant workers in China, this paper will explore the dual logic of digital divide generation of elderly migrant workers and the development context of social governance according to China's social structure and the living conditions of migrant workers in big data, and try to enlighten the key and difficult points to be solved in the current field of pension security.

3. Research Design

3.1. Data source and sample design

As far as China is concerned, migrant workers mainly refer to those who are engaged in construction industry, manufacturing industry and other low-technology, mainly manual labor from rural to urban migrant workers. According to the relevant statistics of the National Bureau of Statistics, by the end of 2022, the total number of migrant workers in China has reached 290 million. That's up 1.1 percent from 2021, according to the communique. In fact, the total number of migrant workers in China has always shown an increase, and the average age has also reached 41.7 years old, an increase of 0.3 years compared with 2021, and the proportion of migrant workers over 50 years old has increased from 21.3% to 27.3%. [7]And their survival condition and social integration quality affect our economic and social development and social harmony and stability in a certain sense.

3.2. Design of indicators and scales

Aiming at the variables of elderly migrant workers, this paper designs the demographic characteristics and social governance variables of elderly migrant workers living in urban and rural areas with reference to the "National Migrant Workers Monitoring Survey Report" released by China. Demographic characteristics mainly include gender, age, education level, marital status; The variables of social governance status mainly include the type of household registration, the way of working, the forced return to the hometown after the withdrawal order, other work income, the use of mobile phones and the situation of children. Among them, the type of household registration, the way of working and the forced return to the hometown after the liquidation order reflect the aging tendency of migrant workers, which is subdivided into the social identity attribute factors of elderly migrant workers. Other work income, mobile phone use and children reflect migrant workers' quality of life and work, which is subdivided into social status attribute factors.

Aiming at the variables of digital divide, this paper adopts analytic hierarchy process (AHP) to design the research framework for the research on the data divide of mobile phone use of elderly migrant workers, and makes localization optimization and supplement of index content in combination with China's actual conditions, establishing a measurement index system composed of target layer, standard layer, index layer and index content (see Table 1).

Table 1 Measurement index system of mobile phone use and digital divide among elderly migrant workers

Target layer	Reference bed	Standard meaning	Index level	Index content
Mobile phone use and	Access	Hardware/software facilities required for Internet access, etc	Hardware/software available Access charge	Mobile phone information contact or not

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digital divide among elderly migrant workers	Basic skills	The ability of groups to use information technology	Information intelligence difference	Mobile phone information use scope and use differences, etc
	Content	Information skills, content and product selection and penetration	Information content Network information products	Mobile phone information use function and content
	Desire	Personal motivations, interests, preferences, etc	Type of use and satisfaction	Mobile Internet purpose, type, frequency of use, etc

4. Research Results

At present, China's migrant workers have become an important force in the development of network and real society and the main body of the urbanization population transfer, and their embedment and dependence on new media has become an indisputable fact. Therefore, this paper takes the elderly urban migrant workers as the research object, and determines a total of 16 research indicators according to the definition, measurement methods, design ideas and governance schemes of the digital divide. The descriptive analysis is detailed (see Table 2).

Table 2 Descriptive statistical analysis of variables related to mobile phone use and digital divide among elderly migrant workers (N=3840)

variable	Mean value	Standard deviation
Gender (Male =1)	1.41	.493
Age (60 + =1)	3.58	1.595
Education level (little or no literacy =1)	3.52	1.482
Marriage (married =1)	1.66	.502
Household Registration type (Municipal non-agricultural registration =1)	3.54	.978
Working outside (alone =1)	1.66	.615
Forced to return home after clearance order (inverted =1)	3.54	1.296
Is there any other work at present (yes =1)	1.60	1.175
Income status (less than 1000 yuan =1)	3.27	.792
Have children (yes =1)	4.22	1.991
Children present (absent =1)	2.02	.161
City, town, Township Living conditions (Urban living =1)	3.66	1.507
Monthly mobile Internet traffic (50M and below =1)	4.23	1.163
Average mobile Internet time per day (less than 0.5 hours =1)	2.83	.161
Have used mobile phone online shopping (yes =1)	1.03	.500

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Other functions of the phone except calling and texting (social =1)		
Social networking (such as wechat, QQ, Weibo)	.58	.493
Reading (such as reading People's Daily news, wechat reading, electronic information acquisition, etc.)	.35	.477
Entertainment (such as playing mahjong, brushing Tiktok, brushing Kuaishou, listening to NetEase cloud, etc.)	.47	.499
Business transactions (such as Taobao, Pinduoduo, Alipay, etc.)	.19	.380
Life services (such as wechat steps, weather, calendar, bus, etc.)	.20	.478
Other	.05	.266
Which of the following aging apps is usually used		
Wechat	.17	.372
Deft hand	.13	.356
Trill	.36	.423
Alipay	.47	.458
Other	.05	.217

During the survey, we learned that the communication infrastructure, mobile phone signal coverage and product and service provision in urban and rural areas are relatively perfect and uniform, and there is no significant difference in the first digital divide of migrant workers. Therefore, this study takes into account the three dimensions of the second and third divides: skill gap, willingness gap and content gap, and uses a regression model to study the influence of mobile phone use of elderly migrant workers on the digital divide.

4.1. Skill Gap

When analyzing whether there is a digital divide in the use of mobile phones by elderly migrant workers, this paper mainly investigates the mobile phone ownership, Internet application and mobile online shopping application of migrant workers, with a view to studying whether there is technical stratification and isolation among them. In the analysis, the demographic characteristics and social status variables of migrant workers were used as control variables for regression (see Table 3). The results showed that: in terms of mobile phone exposure, it was positively correlated with income, and negatively correlated with age and living conditions in cities, towns and townships; In terms of mobile phone use, there are differences in age and marriage, indicating that migrant workers' mobile phone information access and use are differentiated. The first-generation migrant workers with good education, who have just retired after the withdrawal order, have other incomes and have children are relatively enthusiastic about mobile phone Internet. In terms of high-end mobile applications such as mobile online shopping, gender correlation is the first time, indicating that women have an advantage in mobile online shopping applications, but with the decrease of education level, retirement income and living conditions, their online shopping willingness correspondingly shows a downward trend. This shows that with the deepening of migrant workers' ownership and application of mobile phones, their demographic differences and social living conditions become more embedded, and the phenomenon of information gap becomes more obvious. Mobile phone applications catalyze the information differentiation and social stratification of elderly migrant workers to a certain extent. But at the same time, we also see that it is not related to the household registration of migrant workers, the nature of work, and whether there are other jobs at present, which indicates that China's current media technology, aging apps,

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and urban-rural dual boundary problems have not adapted to the needs of elderly migrant workers.

Table 3 Binary logit regression model of digital divide skills gap in mobile phone use of elderly migrant workers

	Whether to use mobile phone	Can I access the Internet?	Have you ever used your mobile phone to shop online
Gender (Male =1)	. 278 (. 257)	. 054 (. 106)	-. 717*** (. 094)
Age (60 + =1)	. 400*** (. 095)	-. 303*** (. 038)	. 280*** (. 044)
Education level (little or no literacy =1)	. 032 (. 095)	. 703*** (. 053)	-. 221***(. 032)
Marriage (married =1)	-. 291(. 354)	-. 602(. 140)	-. 017(. 113)
Household Registration type (Municipal non-agricultural registration =1)	-. 127(. 125)	. 013(. 093)	-. 009(. 076)
Working outside (alone =1)	. 220(. 214)	. 070(. 054)	-. 037(. 049)
Forced to return home after clearance order (inverted =1)	-. 378***(. 109)	. 014(. 047)	. 048(. 041)
Is there any other work at present (yes =1)	-. 037(. 039)	. 008(. 017)	. 022(. 015)
Income status (less than 1000 yuan =1)	-. 037(.039)	. 008(. 017)	. 022(. 015)
Have children (yes =1)	-. 372***(. 105)	. 304(***(. 048)	-. 260***(. 043)
Children present (absent =1)	. 046(. 062)	-. 006(. 027)	-. 092***(. 023)
Constant term	-3. 290**（1. 150）	-. 132（. 492)	1.978***(. 422)
-2 log-likelihood value (R2)	592. 873	2470.381	2935.026
Sample size	3060	2792	2324

Note: (1) Standard error in parentheses. (2) + P < 0.1, P < 0.05, * * * * * P < 0.01, P < 0.001).

4.2. Willingness Channel

The Willingness ditch mainly studied the influence of personal motivation, interest and preference of mobile phone use on mobile phone use of elderly migrant workers. Firstly, this paper investigates the purpose of mobile phone use of elderly migrant workers (α coefficient is 0.859) by using the Li Keert scale. Through factor analysis (principal component and maximum variance value method), four common factors with eigenvalues greater than 1 are extracted, and the total variance contribution rate of factors is 59.561%. The actual representative meaning is given according to the load of each variable on each factor (see Table 4); Then, an OLS regression analysis was conducted on the demographic characteristics and socio-economic status of the elderly migrant workers (see Table 5).

Table 4 Factor analysis of mobile phone use purpose of elderly migrant workers

Select 因子 Divisor	Ingredient			
	Presentation requirement factor	Compensatory demand factor	Practical demand factor	Desirability factor
1. Acquire information and knowledge	.059	-. 202	. 722	. 177

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2. Get in touch with your child	. 474	. 197	. 577	. 246
3. Get involved in social affairs	. 242	. 212	. 745	. 062
4. Satisfy curiosity	. 067	. 226	. 337	.647
5. Relieve loneliness and let off steam	. 051	. 188	. 159	. 746
6. Shopping and financial management	. 108	. 213	. 570	. 175
7. Facilitate external communication	. 102	-. 305	. 096	. 666
8. Get other revenue	. 072	. 823	. 173	. 072
9. Make a variety of friends	. 481	. 203	. 133	. 361
10. Reflect opinions and monitor the government	. 311	. 476	. 448	-. 072
11. Engage in recreation	. 300	. 037	-. 004	. 576
12. Lie and swear freely	. 166	. 824	. 068	. 035
13. Get people's attention	. 630	. 492	. 132	. 122
14. Express your opinion	. 632	. 492	. 132	. 122
15. Anonymous emotional communication	. 725	. 115	. 385	-. 082
16. To adapt to society	.768	. 002	. 279	. 188

At the same time, based on the purpose of mobile phone use, this paper also conducted a sequential regression from the two aspects of mobile phone use time and Internet traffic to study the penetration and dependence of mobile phones on elderly migrant workers (see Table 5).

Table 5 Regression model of willingness gap in mobile phone use of elderly migrant workers

Dependent variable 因变量 Independent variable	Mobile phone use purpose 0LS return				Average mobile phones per day Online time	Mobile phone per month Internet traffic
	Presentation demand factor	Compensatory demand factor	Practical demand factor	Desirability factor		
Constant term/threshold	-. 058(. 199)	-. 957***(. 197)	. 564**(. 199)	-. 157(. 198)	-2. 555***(. 369)	-1. 307***(. 359)
Gender (Male =1)	. 101*(.044)	. 102*(.044)	-. 030(.044)	-. 032(. 044)	-. 060(. 091)	-. 194*(. 080)
Age (60 + =1)	. 087***(. 020)	. 069***(. 019)	. 030(. 020)	. 085***(. 020)	-. 336***(. 037)	-. 250***(. 036)
Level of education (little or no literacy =1）	. 036*(. 015)	. 055***(. 015)	-. 085***(. 015)	-. 009(. 015)	. 207***(. 028)	. 147***(. 027)
Marriage (married =1)	. 047(. 053)	-. 035(. 035)	. 020(. 053)	. 117*(. 053)	-. 265**(. 097)	-. 400***(. 097)
Household Registration type (Municipal non-agricultural registration =1)	-. 036(.036)	-. 035(. 035)	-. 049(. 036)	.076*(. 036)	. 145*(. 066)	. 156*(. 065)
Working outside (alone =1)	. 004(. 023)	. 174***(. 023)	-. 031(. 023)	-. 046*(. 023)	-. 022(. 043)	. 000(. 042)
Forced to return home after clearance order (inverted =1)	-. 006(. 019)	. 127***(. 023)	-. 044*(. 019)	-. 029(. 019)	-. 059(. 036)	-.039(. 035)

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Is there any other work at present (yes =1)	-. 009(. 007)	-. 026***(. 020)	.006(.007)	. 000(. 007)	-. 033**(. 013)	-. 007(. 012)
Income status (less than 1000 yuan =1)	-. 144***(. 020)	-. 070***(. 020)	-. 068***(. 020)	. 044*(. 020)	. 040(. 036)	. 254***(. 036)
Have children (yes =1)	. 199***(. 027)	. 056*(. 026)	. 118***(. 027)	. 073**(. 026)	. 145**(. 049)	-. 055(. 049)
Children present (absent =1)	-. 015(. 011)	-. 008(. 011)	. 007(. 011)	-. 015(. 011)	.060**(. 020)	.053**(. 019)
Sample size	.045 2214	. 068 2214	. 042 2214	. 036 2214	670 2288 2252	6897 516 2290

Note (1) Standard error in parentheses. (2) =P<0.1, *P< 0.05,** P<0.01,***P<0.001.

As can be seen from the above table, in terms of demographic characteristics of elderly migrant workers, there is a divergence between gender and age, education level, and marriage and love status. Among them, gender is related to mobile Internet traffic, indicating that female migrant workers are more inclined to use mobile Internet, but male migrant workers prefer mobile Internet to meet the needs of self-display and compensation. In terms of age and education level, except for practical function and sex function, other observed variables are related, indicating that compared with younger and more educated migrant workers after retirement, they are more dependent on mobile phones and like to use mobile phones to surf the Internet. In terms of mobile phone functions, migrant workers with higher education level prefer compensatory mobile phone functions, while those with lower education level prefer practical mobile phone functions. In addition, in terms of marriage and love, unmarried elderly migrant workers rely more on mobile phone use and mobile Internet access, like compensation function, married elderly migrant workers prefer sex function. In terms of the social identity attributes of migrant workers, household registration, job type and city, town and township living conditions are strongly related to the compensatory function of mobile Internet, indicating that the longer the years of working outside, but migrant workers registered in rural areas more dependent on mobile phone compensatory function. The social status of migrant workers is negatively correlated with their income, indicating that migrant workers with low income who have not returned to their hometown and live in cities are more inclined to use mobile phones to meet their needs in various aspects and rely more on mobile phones to surf the Internet. However, their income is related to the Internet traffic, indicating that they care more about the Internet cost. In addition, the living conditions of elderly migrant workers also affect the time and flow of their Internet access.

Table 6 Multivariate logit regression analysis of the content gap of the digital divide in mobile phone use of elderly migrant workers

Dependent variable Independent variable	Mobile phone function					Dating app			
	Social category	Reading category	Entertainment category	Business transactions	Life services	WeChat	QQ	Kwai	Tiktok
Gender (Male =1)	. 140 (.122)	-. 158+ (. 092)	.224* (. 102)	.723**(. 113)	. 555** (. 093)	. 004 (.113)	-. 170 (. 184)	. 002 (. 098)	. 003 (. 110)
Age (60 + =1)	.087** (. 020)	.069***(. 019)	. 030 (. 020)	-. 162* (. 057)	.025 (. 042)	-.254** (. 047)	-.266**(. 061)	-176*** (.044)	. 300 (.200)
Education level (little or no literacy =1)	-. 048 (. 043)	.153*** (. 032)	. 052 (. 035)	.335** (. 038)	.116** (. 032)	. 090* (.040)	. 180*** (.037)	.149*** (. 034)	. 663 (. 485)
Marriage (married =1)	-.191+ (. 098)	. 028 (. 075)	. 019 (. 083)	-. 019 (. 092)	-.159* (. 075)	-. 189 (. 137)	.021 (.135)	-. 040 (. 118)	. 663 (. 485)
Household Registration type (Municipal	. 076 (. 062)	-. 105* (. 049)	-. 060 (. 054)	. 008 (. 059)	.036 (. 049)	-.077(.092)	-.364**(. 096)	-.169* (. 080)	. 063 (. 144)

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non-agricultural registration =1)									
Working outside (alone =1)	.130* (. 054)	.104* (. 041)	.078+ (. 045)	. 080 (. 050)	.118** (. 041)	.174** (.057)	-. 046 (. 059)	. 057 (. 052)	.520* (.258)
Forced to return home after clearance order (inverted =1)	. 023 (. 019)	-. 023 (. 014)	.003 (. 016)	-022 (. 017)	.022 (.014)	. 050 (. 050)	.112* (.050)	.141** (. 044)	-. 006 (. 079)
Is there any other work at present (yes =1)	. 201***(. 056)	- 040 (. 042)	. 028 (. 047)	.223** (. 053)	. 006 (. 042)	-. 016 (.018)	-.004 (.017)	-. 024 (. 015)	. 023 (. 027)
Income status (less than 1000 yuan =1)	-.053+ (. 029)	- 034 (. 023)	-. 052* (. 025)	-. 011 (. 027)	-.057+ (. 023)	-. 004 (. 051)	-. 061 (. 052)	.161*** (. 045)	. 377+ (. 207)
Have children (yes =1)	-. 049 (. 074)	. 060 (. 056)	-. 107 (. 062)	-. 040 (.069	. 008 (. 056)	. 069(. 070)	-. 080 (. 069)	-.211** (. 060)	-315 (. 264)
Children present (absent =1)	.289**(. 061)	. 039 (. 043)	.174***(.048)	.300**(. 051)	. 037 (. 043)	.027 (. 028)	.255** (. 055)	-.004 (. 024)	.209* (. 086)
Sample size	1943.28 1 2204	2970.13 7 2204	2604.631 2204	2131.633 2204	2974.79 6 2204	2207.7 75 2204	2163.70 6 2204	2715.98 5 2204	238.87 2 2204

4.3. Content Gap

Content gap is the core part of investigating the digital divide in mobile phone use of elderly migrant workers, which mainly investigates the skills, content and product selection and penetration degree of elderly migrant workers on mobile phone information. In this paper, multiple Logit regression analysis is carried out on the function and content of migrant workers' mobile Internet use (see Table 6). Based on the previous research, two indexes of mobile Internet use time and traffic are introduced.

In terms of mobile Internet access functions of elderly migrant workers, the results show that such groups generally refuse to use current mobile communication software applications, and fewer elderly people will use minority communication platforms, such as Kuaishou, Tiktok, etc., while the user groups of emerging digital industries such as the Internet of Things, big data, AI, blockchain, and digital renminbi are even less of such groups. Therefore, this study made a further regression analysis on mobile social applications of migrant workers, and the results showed that: in terms of demographic characteristics of elderly migrant workers, only the region and education level were correlated with the three major communication platforms QQ, wechat and Douyin, and age was negative. For emerging social platforms, education level is related to "Tiktok" and marginally related to "wechat". Moreover, the data show that older migrant workers with higher education tend to choose wechat, while those with lower education tend to prefer Douyin and Kuaishou. In terms of social identity attributes of elderly migrant workers, household registration and city, town and township living conditions are related to QQ and wechat. In the social status of elderly migrant workers, income status and living style are related to "wechat", and whether their children are around is marginally related to "Douyin" and "Kuaishou". In addition, among the two indicators of the frequency and traffic of migrant workers' mobile Internet access, the mobile traffic is mainly related to the mobile

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application platforms of social networking, entertainment and business transactions in terms of mobile functions. In the subdivision investigation of social platforms, mobile phone traffic is related to QQ and wechat, and mobile phone use time is related to mobile phone function selection of migrant workers and social platforms. These indicate that mobile phone applications of elderly migrant workers are more popular in cities than in rural areas, but there are certain preferences for mobile Internet applications and function choices.

5. Feedback governance: Promote the integration of elderly migrant workers into digital life

First, the government guides and promotes rural revitalization. In practice, the national government and the above enterprises have set up various forms of implementation plans, such as the "Opinions of the General Office of the Guangdong Provincial People's Government on Promoting the work of nurturing rural talents", the "Implementation Opinions of the Huizhou Municipal People's Government Office on Promoting the work of Encouraging and guiding rural talents to return to entrepreneurship" and the "channel" of Yunyang District of Shiyan City. Announcement on activating new driving forces for rural development. With the advent of digital rural empowerment, all local governments are providing policy guidance for elderly migrant workers, developing suitable jobs, broadening employment and entrepreneurship channels, and supporting elderly migrant workers staying in cities and returning to their hometowns to enjoy the protection of relevant employment and entrepreneurship systems. It is believed that under the practice of civilization in the new era, more local governments will set up similar programs. We will encourage rural migrant workers to get older and achieve equitable governance in urban and rural areas.

Second, the expansion of intergenerational feedback to promote circle communication. Professor Hong Jiewen found that media feeding behavior in rural families has the following characteristics: First, compared with urban families, there is a larger digital gap between parents and children in rural families, which is reflected in smart device consumption, new media use degree, personal media literacy and other aspects; Second, intergenerational feeding behavior dominated by family members occupies a central position in parents' wechat learning and use, and its formation process is affected by network environment, learning willingness and ability, family-parent-child relationship and other factors. Third, while parents use wechat to empower themselves and strengthen communication among family members, there are also potential negative effects, which require children to carry out deeper and continuous feedback on their wechat use. [8] For example, the new generation is encouraged to teach the first generation of migrant workers to use age-appropriate products, while strengthening the older generation's willingness to learn digital technology and media literacy. Then, the urban network information department takes the lead to carry out a series of education and assistance work in the villages under its control point-to-point in a "pairing" way, so as to open up the closed loop of information communication between cities, villages and ages. Change the bad status quo of "rural people only with rural people", "urban people only with urban people", "old people only with old people", "young people only with young people", so as to break the information barrier, let the advantage side and the disadvantage side work together, in order to bridge the digital difference and narrow the impact of circle differentiation.

Third, technology empowerment feeds back and balances urban and rural governance. British cultural studies expert ScottLash stressed: "In a society where media and code are everywhere, power increasingly resides in algorithms." [9] We build relationships with others on the platform psychologically and physically by watching and acting, and your behavior, interests, etc. are disciplined by similar people, and such connections will enter the community from the weak relationship to the strong relationship under the action of the algorithm. At present, the city has

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enjoyed the dividends brought by informatization, in the face of the situation that elderly migrant workers are forced to return home with weak information, the platform algorithm should bear the responsibility of helping. For example, Tiktok, which has an algorithmic aggregation platform, relies on rich personalized and customized content distribution to create a we-media business that conforms to the interests and preferences of elderly migrant workers. At the same time, the platform algorithm determines the users' daily information contact, and has become an indispensable content transmission platform for professional media organizations, bringing elderly migrant workers into an invisible control, and gradually narrowing the information gap between urban and rural areas. At the same time, through science popularization and knowledge dissemination to empower migrant workers, eliminate the gap between urban and rural areas, bridge their knowledge gap and technology gap, and promote their convenient use of the Internet and equal application media, and help "poverty eradication" and "beautiful countryside" construction from vision to reality.

6. Conclusion and discussion

At present, the elderly migrant workers have been "seen" by more people through big data push. The countryside was also "resurrected". However, people should be more soberly aware that in order to completely eliminate the gap between urban and rural areas, how to fill in the knowledge gap, technology gap and other resource cracks between urban and rural areas is worth more humanities and social science research to explore.

First of all, the arrival of big data, especially the digital age and the intelligent age, has provided unlimited possibilities for eliminating the hindering factors of these inequalities. In this process, it is necessary to prevent the simplification of replacing governance with technology, replacing software with hardware, replacing services with platforms, replacing people with machines, and not to regard the use of cloud computing and big data as a social governance technology, and regard the construction of big data communication system and rural revitalization as a competitive movement to achieve the so-called elimination of forms. We should focus on the concept of people-oriented, rather than neglecting the needs of people for the sake of rapid urbanization and technological upgrading. If the country does not fundamentally implement the requirements of "continuously improving the people's sense of gain, happiness, and security", the intervention of big data in rural areas will only become a technological violence, and it will not be able to achieve the popularization of basic public services and the improvement of human happiness index. At the same time, the wide popularization and application of mobile phone network in migrant workers can reduce and buffer the difference between urban and rural elderly migrant workers, and play an important role in urban integration.

Secondly, within the group of migrant workers, the gap between urban and rural areas has been significantly narrowed, but there is still a certain gray gap. Through ANOA cross analysis, this study finds that there are some gaps in mobile Internet frequency (time), depth (traffic), content used and updates to new applications of information networks. With the continuous integration of social development and telecommunications technology, and the trial of education and training in various provinces, the gap between people's popularity of network applications will gradually narrow, but mobile phone network applications and information updates continue to innovate. For example, smart digital applications such as social platforms and digital renminbi shopping. Therefore, how to improve the sustainable development of mobile phone digital applications for elderly migrant workers, how to deal with the aging migrant workers to truly enjoy pension security, media quality improvement and other issues, all provide us with opportunities and challenges.

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All in all, this study is mainly from the perspective of big data to look at the social network situation of elderly migrant workers, analyze the connotation of double digital divide and other aspects to empirically analyze the relationship between mobile phone network application of migrant workers and digital divide. It is foreseeable that the digital divide problem of elderly migrant workers will be better solved under the guidance of systems and policies in the future. However, researchers can also start from the perspectives of objective media technology, inclusive social environment and giving play to the subjective initiative of the elderly, and jointly discuss subjects and objects such as government guidance, market initiative, social linkage, family support and participation of the elderly. The research on building a smart society and a digitally inclusive society to bridge the double divide, as well as the analysis of national digital rural communication to revitalize social construction is also worthy of hope.

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