Social And Economic Effect Study of China’s Urban-rural Digital Divide Based on Project Management Theory

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Abstract. The urban-rural digital divide has become one of the important factors affecting the urbanization process, which has attracted great attention. This paper analyzes the reinforcing effect of urban-rural digital divide in China by economic dichotomy, draws three conclusions, and puts forward the government's countermeasures on this basis.

Introduction

In the information age Urban-Rural Digital Divide is a common economic and social phenomenon in nations around the world especially in the developing countries. It refers to the gap between urban and rural areas in information technology access, information application access, people’s realization of information technology and access environment. In a word it refers to the urban-rural informatization gap [1]. Since the information technology revolution the urban-rural digital divide has appeared in a lot of countries, China included. As the result of China’s informationization process, the urban-rural digital divide is actually a reflection of the imbalance between urban and rural information development [2]. Such an imbalance serves as a barrier in China’s urbanization process, which hindered industrial graduation, income increase and consumption level of rural people and urban-rural social assurance integration [3]. It also impedes the rural area’s transformation of ways of living from the backward one to the modern one, prevents people in the rural areas to migrate to cities. All of these factors are not good for the construction of a harmonious society [4].

Literature Review

In the OECD report Understanding Digital Divide (2001) the author pointed out that there is a common phenomenon in all OECD countries that the popularization degree of internet in urban areas is much high that that of the rural area, the latter of which definitely harms the economic development. [5] The international Telecommunication Alliance proposed in Digital Divide In Rural Areas (2003) the urban-rural digital divide would deprive the rural residents the rights of participating in social communication, entertainment, information access, doing business and social service which in turn affects the urbanization process [6]. As the biggest developing country in the world China has been disturbed by urban-rural gap [7]. In recent years the influence of digital gap on urbanization has drawn considerable attention as a result of the popularization of information technology in our country, urban areas and rural areas alike. In 2010, the Department of Technology has made a report on this issue by analyzing that the digital divide would worsen the problem of urban-rural dichotomy and slows the urbanization process [8]. Chinese Social Science Academy also studied on the digital gap’s influence on agricultural modernization, concluding the gap can hinder the improvement of labor productivity.
The Reinforce Effect of China’s Digital Gap on Its Urban-rural Economic Dichotomy

From the perspective of economic urbanization, China’s urbanization consists mainly in the transformation of economic dichotomy to economic integration. However the digital divide has deterred this process.

Demonstrations of the Reinforcement Effect

The urban-rural economic dichotomy is demonstrated in the imbalance of urban-rural industrial structure, the income gap between urban and rural residents, and the disparity of consumption level. The reinforcement effect of China’s digital divide lies in both hindering the industrial up-gradation in rural areas as well as in impeding income increase of rural residents and their consumption level.

Impediment of Industrial Upgrading

The ongoing of urbanization and the integration of the urban-rural dichotomy requires industrial upgrading in rural areas which means that the percent of the first industry, agriculture will be cut down in the national economy while the importance of the tertiary industry will be increased. However the digital divide makes this task more difficult.

The traditional Chinese agriculture is always based on family production with human labor plus animal power as the production tools. Against such background, the production efficiency is quite low. In recent years, the Chinese government has tried a lot of means and released some policies to facilitate the transformation of traditional agriculture through information technology. To be more specifically the transformation of traditional agriculture to the modern way of production mainly relies on modern information technologies such as internet, computer, remote control to conduct production evaluation, disaster broadcast, resource seeking, insect attack prevention so as to improve the whole agricultural production system. Currently many Chinese villages have not built their own crop information data.

Impediment of Rural Residents’ Income and Consumption Level

The balance of rural and urban citizen income is a strong demonstration of the transformation of dual economic structure. However the digital divide caused an information gap between rural and urban citizens, hindering the former to increase their income and improve their consumption level.

The digital divide impeded the improvement of rural residents’ consumption level since in the modern era information is an important economic resource and it plays a key role in income distribution. Access to abundant information means access to more income, vice-verse (Weixian Xue, et. Al 2010). It can be seen from table 3-1 that during 2010-2013 the popularization of online trading, stock exchanges among urban citizens is much high than that among rural residents. Specifically the popularization of online trading among urban residents is 5-6 times higher than that of rural people, and the figure for online stock exchanges is 7-10 times. This is strong evidence that the rural residents have much fewer opportunities and channels to earn money and their knowledge in this aspect is even more limited than urban residents. For instance, due to lack of access to online resources rural people can hardly know customer demand for agricultural products, even if they have such information they do not master the necessary skills of online trading. This causes difficulty for rural residents to relieve their own poverty. Hence the digital divide may lead to the phenomenon that the rich become richer and the poor become poorer, the so-called Matthew Effect.
Table 1. Comparing for permeation of network trade and stock during 2010-2013.

| Types of Residents | 2010 Urban Residents | 2010 Rural Residents | 2011 Urban Residents | 2011 Rural Residents | 2012 Urban Residents | 2012 Rural Residents | 2013 Urban Residents | 2013 Rural Residents |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Popularization of Online Trading | 10.03% | 1.80% | 14.14% | 2.64% | 20.4% | 3.72% | 23.5% | 4.61% |
| Popularization of Online Stock Exchange | 4.99% | 0.49% | 7.54% | 1.18% | 9.4% | 1.20% | 11.1% | 1.45% |

Note: Online stock exchange includes online stock exchange and funds exchange. Sources: China Internet Information Center (2011-2014); China Rural Internet Development Research Report (2011-2014).

The digital divide impedes the increase of rural residents’ consumption level. On the one hand rural residents cannot gain significant economic benefits through online information; on the other hand the digital divide impedes the transformation of consumption habits of rural residents. Presently buying daily necessities on the websites is commonplace and the traditional way of consumption is changing to online consumption. However the rural residents’ access to information technology leaves far behind that of urban residents. From Table 3-2 we can see the popularization of online consumption among Chinese rural residents is quite low, specifically it’s 7-8 times lower than that of the urban residents. The popularization of online payment among rural residents is 5-7 times lower than that of the urban residents, demonstrating the difficulties rural residents are confronted with in increasing the categories, quantities of consumption products. As the gradual placement of online consumption model to traditional one, the digital divide will impose greater effects on the increase of rural residents’ consumption level.

Table 2. Comparing for permeation of network consumption and payment during 2010-2013.

| Types of Residents | 2010 Urban Residents | 2010 Rural Residents | 2011 Urban Residents | 2011 Rural Residents | 2012 Urban Residents | 2012 Rural Residents | 2013 Urban Residents | 2013 Rural Residents |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Popularization of online Consumption | 14.11% | 1.70% | 20.32% | 2.91% | 25.01% | 3.50% | 28.9% | 4.22% |
| Popularization of online Payment | 8.17% | 1.11% | 12.35% | 2.28% | 17.45% | 3.11% | 21.3% | 4.06% |

Sources: China Internet Information Center. 2011-2014. China Rural Internet Development Research Report (2010-2013). Beijing: China Internet Information Center

The Formation of Reinforcement Effect

The transformation from dual economy to economic integration will inevitably cause consumption material flows between the rural and urban areas. From the perspective of urban residents, the flow of agricultural, forestry and fishing products to the cities provides urban residents with producing and consumption materials; from the perspective of the rural residents the flow of industrial products to rural areas changes the economic outlook of the rural areas.

The digital divide also makes it hard for the communication between the production fields of rural and urban areas. The agricultural products are difficult to flow to the needed sections of the city, therefore reinforce the dual economic structure. In many rural areas of China many farms lost the opportunity to sell their products online due to lack of knowledge. On the other hand many shopping websites built by urban production enterprises do not have the capacity to attract many producers and sellers of agricultural products to trade online. In a survey made by China’s Social...
Science Academy many local government and enterprises in the county level made efforts to produce local agricultural specialties such as new type fruits and vegetables, local tea. However due to insufficient advertising and limited marketing channels the farmers cannot fully benefit from it. With the help of internet and online shops, online sales exhibition system, and long distance ordering system these problems might have been solved.

The Reinforcement Effect of The Digital Divide on China’s Economic Dichotomy

From the perspective of urbanization the main step of China’s urbanization is the transformation of economic and social dichotomy to the integration of rural and urban structure. However the digital divide exasberated the problem and further enlarged the gap between urban and rural places.

Demonstrations of the Reinforcement Effect

The social structure dichotomy mainly includes the dichotomy in the level of social security, education and entertainment. The reinforcement effect of the digital divide on China’s social structure dichotomy is demonstrated specifically on the impediment of the three aspects accordingly.

Impediment of Social Security Integration

As the ongoing of urbanization the social security level between rural and urban places tend to converge gradually. Currently China is already in the era of information age and infomationization is exerting effect on every aspect of our social security system. Nevertheless the digital divide the imbalance of infrastructure constructing it causes makes it hard for the integration of rural-urban social security.

The digital divide also impedes the continuity of floating population. According to the report “The Twelfth Plan of Labor and Social Security Informationization Construction” by China’s Human Resource and Social Security Department in 2012, There are about 100 million floating population every year with 40 million flow among different provinces and 60 million flow within the provinces. These people take 80% of the rural labors. As they have limited access to information they cannot usually complete the procedure of mutual recognition of unemployment insurance, endowment insurance and medicare insurance, or they have no such knowledge at all. Therefore it’s difficult for the floating population to continue their own social security procedures on the trans-regional level, preventing them from improving their social security level.

According to the report of Guangming Daily in 2010 there were 6.4 million floating population in Shanxi province, however only 1.7 million transferred their endowment procedure on line and most of these people believe the inability to use internet to be the main reason for this difficulty (Yongning Chen, 2011). Again this proves that the digital divide impedes the floating population from completing and continuing their social security procedures on line therefore leading to the absence of their social security service.

Impediment of the Modernization Rural Residents’ Cultural Life

The modernization of cultural life is an important aspect for urban residents in today’s information age. The digital divide impedes the modernization of rural residents’ cultural life from two aspects that is the modernization of their entertainment life and their social life.

The digital divide impedes the modernization of rural residents’ way of entertainment. Information technology such as internet can provide rural and urban residents with a variety of multi-media cultural and entertaining services. While web tv, online games, digital media and entertainment has already been popularized in cities, they are quite rare in rural places due to the lack of infrastructure and hardware such as optical cable, cable television base station, wireless network station, and data exchange platform. This in turn serves as an obstacle for the modernization of rural residents’ cultural and entertainment life. It can be seen from table 3-3 that during 2010-2013 the popularization rate of online music, online literature and online games among rural residents is 3 times lower than that among the urban residents, a firm demonstration of the
impediment effect the digital divide has on the modernization of rural residents’ cultural and entertainment life.

**Table 3.** Comparing for permeation of network music, literature and game during 2010-2013.

| Year | 2010   | 2011   | 2012   | 2013   |
|------|--------|--------|--------|--------|
|      | Urban Residents | Rural Residents | Urban Residents | Rural Residents | Urban Residents | Rural Residents | Urban Residents | Rural Residents |
| Types of Residents | 29.85% | 9.45% | 37.37% | 12.41% | 40.70% | 13.56% | 55.2% | 15.07% |
| Popularization of Online Residents | 16.08% | 5.33% | 19.04% | 6.18% | 22.35% | 6.83% | 25.1% | 7.04% |
| Popularization of Online Literature | 21.23% | 6.81% | 30.60% | 10.49% | 33.85% | 11.69% | 37.5% | 12.09% |

Source: China Internet Information Center. 2011-2014. China Rural Areas Internet Development Survey Report (2010-2013). Beijing: China Internet Information Center

**Table 4.** Comparing for permeation of ICQ, Email, communication site and Blog during 2010-2013.

| Year | 2010   | 2011   | 2012   | 2013   |
|------|--------|--------|--------|--------|
|      | Urban Residents | Rural Residents | Urban Resident s | Rural Resident s | Urban Residents | Rural Resident s | Urban Residents | Rural Resident s |
| Types of Residents | 27.10% | 8.31% | 32.07% | 10.23% | 39.6% | 13.25% | 47.6% | 15.33% |
| Popularization Rate of Instant Communication | 21.65% | 5.27% | 27.21% | 6.69% | 31.10% | 7.34% | 34.5% | 8.81% |
| Popularization Rate of E-mail | 16.97% | 4.09% | 21.36% | 6.15% | 27.85% | 7.42% | 36.8% | 8.95% |

Source: China Internet Information Center. 2011-2014. China Rural Areas Internet Development Survey Report (2010-2013). Beijing: China Internet Information Center

**The Forming Process of the Reinforcement Effect**

With the social dichotomy, rural and urban residents in our country have totally different ways of living. The modernized way of living will therefore is limited by such dichotomy which is a main feature of the divided society (Hongxun Deng et, al 2012). From the dimension of the forming process, the digital divide reinforced the gap between rural and urban residents through impeding the modernization of rural residents’ way of living.

The transformation of social dichotomy to social integration requires the pervasion of the modern way of living, the core of which is online activities. The modern way of living is closely related to internet and the participation in it even becomes the parameter for the integration to modern way of living. China’s digital divide however blocked the pervasion of modern way of living among rural residents, consolidating the rural-urban social dichotomy and making it more difficult to dissolve.

Due to the digital divide. Rural residents can hardly change their traditional way of living or their old habits, unwilling to open their mind to internet and other information technology. National Information Center pointed out in a report that in 2010 only 8% of the rural residents were willing to participate in online activities. Most residents do not want to change their traditional way of living due to insufficient knowledge of internet, lack of computers and other devices, or the high cost of using internet. Therefore they could not go shopping online, pay all kinds of fees including the social security insurance cost online. To participate in public life such as government election through internet is even out of their mind. Since the rural residents are not able to participate fully
in modern social life and achieve their own self-development through internet they cannot obtain the same social and economic opportunities as urban residents, making them the “Secondary Citizens” to some extent.

**The Forming Approach of Damping Effect**

The digital divide enlarged the rural and urban information technology gap as well as their social and economic gap, finally leading to the Damping Effect of urbanization. The following picture (Figure 1) is the demonstration of the three approaches of the forming process of the Damping Effect. One is that the digital divide prevents the flow of production and consumption materials between rural places and urban places, making it difficult for the capitals and industrial products in the cities to be distributed to rural places through internet information platforms. On the other hand, agricultural products and raw materials in rural places are difficult to flow to the needed department in the cities, slowing the speed of industrial upgrading and the increase of rural residents’ income and consumption level. The second approach is that the digital divide makes it difficult for the daily information in the cities and rural places to be transferred between each other, and impedes the pervasion of modern living way centered on internet activities among rural residents, both of which prevented rural residents from enjoying online education and online entertainment. The third approach is that the digital divide makes it difficult for the surplus labor in rural area to improve their professional skills in order to get adapt to urban life and settle down in cities since it’s difficult for them to have reemployment education online. Therefore the population flow from rural to urban places becomes more difficult.

![Figure 1. Three Approaches of the Forming Process of the Damping Effect.](image-url)
Conclusion

In this paper I analyzed the reinforcement effect of China’s digital divide on its economic dichotomy. The research shows that (1) the reinforcement effect can impede the industrial upgrading of the rural places, the increase of rural residents’ income and consumption level. The reinforcement effect forms by impeding the free flow of production and consumption materials. (2) The reinforcement effect slows the social security integration process since and makes it hard for rural residents to develop their education level and enrich their cultural life. The reinforcement effect forms through preventing the modern living way from pervading among rural residents. (3) The rejection effect prevents rural migrant workers from becoming real citizens since they can hardly improve their skills through online education and resources. The reinforcement effect forms by hindering the rural residents from completing social security insurance procedure and settling down in cities.

China is now in the preliminary stage of the information era and the impediment effect of digital divide on the urbanization process is starting to emerge. In the future the damping effect will be stronger. Therefore government should take measures to narrow such gap especially from three aspects: Firstly the government should take steps to construct information platforms to facilitate the flow of production and consumption materials. The information bureau in each government level can be the leading office of the program, they can cooperate with the authorities in charge of agriculture, industry and finance as well as government affairs websites in all levels to construct specialized information exchange platform to facilitate the flow of rural and urban production and consumption materials. Moreover the government can implement a series of policies that benefit the rural residents such as “free internet access”, “Sending Computers to the countryside” so that internet and computer can be popularized in rural families. Last but not least, long distance education and skills training base can be built and perfected by government in the rural areas to provide the rural residents with more professional skills and knowledge, facilitating their immigration to the cities to engage in the secondary and tertiary industry.

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