The public-private partnership (PPP) model in the development of e-commerce and digital skills trainings in rural China

Background Paper

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Abstract

In recent years, we have witnessed the rise of e-commerce platforms in developing countries. Because this has created new business opportunities in the rural economy, governments in developing countries such as China are increasingly collaborating with private sector actors to facilitate the development of ICT infrastructure, services and industry in rural areas. This raises several questions:

- How does the public-private partnership (PPP) model combine resources and services from local government and e-commerce companies?
- What are the roles of each sector in the design and practice of the model?
- What feedback is there from participants in the digital skill sessions?
- What are the strengths and limitations of the model?

This paper uses a case study in Central China to showcase how the Chinese e-commerce platform, Alibaba, collaborates with local government to deliver skills training workshops for rural residents to facilitate e-commerce in developing regions. It suggests that, in the PPP model on rural e-commerce:

- local government plays a significant role in providing funding and recruiting residents to participate in the programme
- technology companies provide skills training sessions that are essential for rural micro-entrepreneurs to benefit from the platform economy.

The collaboration between the public and private sectors represents a new strategy to facilitate a digital economy that incorporates marginalised communities in developing areas. However, findings from the fieldwork show that digital skills training for rural participants requires the provision of supporting resources, such as affordable e-commerce consultancy services and accessible technical assistance.

Keywords:
e-commerce, developing countries, empirical study, China, public-private partnership, PPP

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1. Background to the research

There has been increasing adoption of the internet in developing countries, with more widespread use of mobile technologies and 3G and 4G networks. The new level of interconnectedness has enabled innovations in many industries – for example, education, business, travels, and medical services – and has also profoundly changed interpersonal communication and information-seeking practices in users' everyday lives.

Seeing the potential of ICT for economic and social development, the Chinese central government has prioritised investment in ICT infrastructure and digitalised services as 'national informatisation strategies' since the 1970s. This government-led, top-down 'informatisation' has been part of national economic and social development policy. However, the unequal distribution of ICT infrastructure has widened digital divides between rural and urban China, affecting user adoption of the internet and the development of internet-related service industries (Guo & Chen, 2011).

While 41% of the total Chinese population are rural, according to *The 44th China Statistical Report on Internet Development*, rural users account for only 26.7% of internet population (CNNIC, 2019). E-commerce has flourished in urban China, with the rapid growth of logistics networks and the wide proliferation of mobile payment systems, yet e-commerce platforms such as Alibaba, Taobao, and JD.com have much lower service coverage in rural areas (CNNIC, 2015).

Many urban entrepreneurs have been able to reach beyond the local market by taking businesses online. However, rural business owners often face obstacles, such as a lack of digital skills or secured loans. To include the rural population as both consumers and sellers in the digital economy, the Chinese government has sought to advance the alleviation of poverty through developing e-commerce. Under the PPP model, the government creates supporting policies and provides public funding, and private sector companies provide technology and information support. This model has been applied across the country in recent years.

This paper uses qualitative interviews and surveys conducted during fieldwork in rural Middle China to examine the design and implementation of the PPP model in providing digital skills training for rural e-commerce development. Using feedback collected from participants in the training programmes, I assess the positive outcomes as well as limitations of the model.

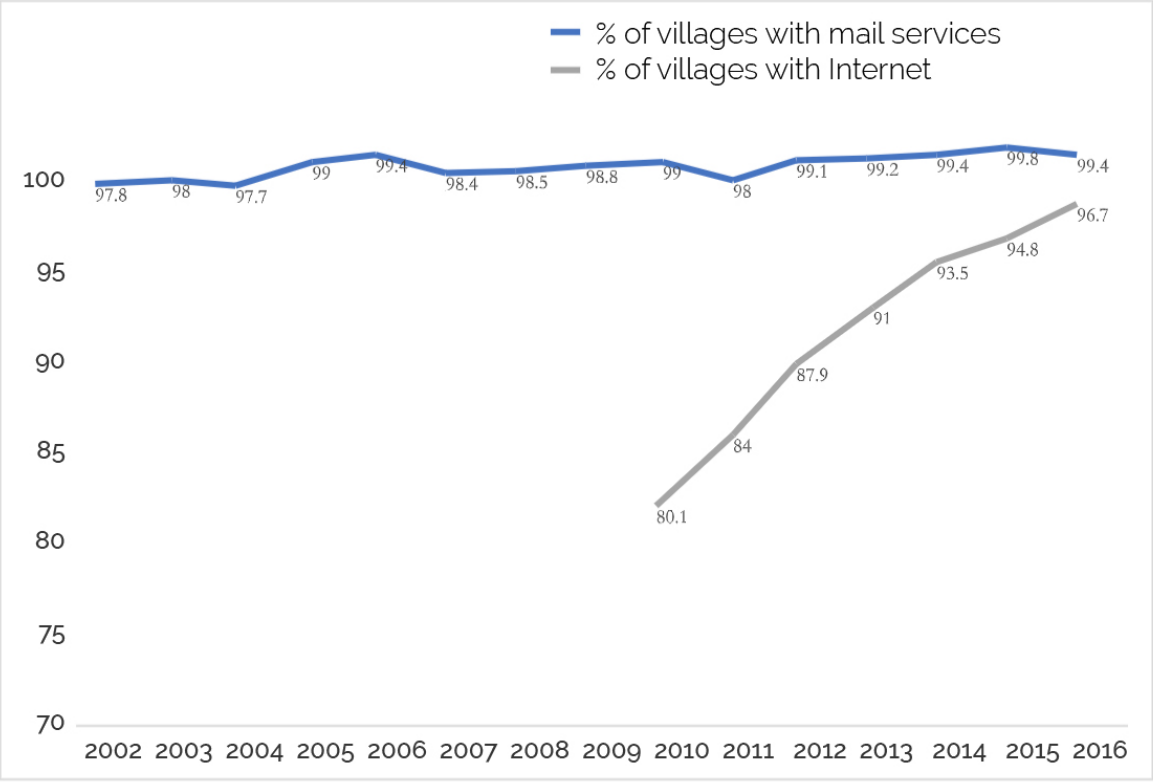
This paper seeks to improve the understanding of how the provision of skills training can narrow the digital gaps between rural and urban communities, and how the public and private sectors could collaborate in developing an inclusive digital economy for the rural population.

1.1 Government-initiated top-down informatisation in China

'Informatisation' (Xinxihua 信息化) was officially defined as a national strategy of industrialisation and modernisation in the Fifth Plenary Session of the 15th Communist Party of China Central Committee in 2000. In 2006, the Chinese State Council published the Development Strategies for National Informatisation between 2006 and 2020 (General Office of the State Council of the People's Republic of China, 2006). This highlighted the main areas of informatisation, as well as action plans to achieve informatisation. As highlighted in the national plan, economic informatisation is one of the main focuses. For example, the plan emphasised the importance of information services for agriculture, rural areas and farmers. Traditional industries, such as energy and transportation, will also implement information technologies. Service industries will be transformed through digital finance, logistic services and e-commerce which will lower transaction costs.

Since 2006, Chinese central and local governments have employed national informatisation strategies to develop Chinese rural areas through the construction of information infrastructure in counties and villages, and the provision of information services to rural residents. The installation of infrastructure such as broadband and cellular base stations in remote areas in rural China enables increased adoption of the internet. Projects such as Selling Domestic Applications to Countryside (Jiadian Xiaxiang 家电下乡) successfully promoted the adoption of information technologies in rural households (Ministry of Commerce of the people's Republic of China, 2019).

Figure 1: Percentages of villages with mail services and internet coverage



Nevertheless, top-down, government-led rural informatisation initiatives have many limitations. The construction of IT infrastructure in almost every village in China within a short period requires extensive public funding from both central and local governments. It has led to collective debts in some villages. As Zhou (2011) found in his fieldwork on China's Paved Road to Every Village (PREV) project in northern China, the lack of funding for construction projects in rural areas could not be resolved by local government alone. Village officials, who tried to implement the government-initiated projects, had to seek alternative funding through collective debts, which eventually added financial burden to the villagers. In a case study on rural informatisation in Southern China, Ting and Yi (2013) found that the government-initiated development of information services led to issues such as lack of policy continuity and credible measurements. This resulted in a gap between what rural residents needed and what government could provide through the top-down approach of informatisation.

1.2 Grassroots adoption of online technology in China

Mobile devices, meanwhile, help to level the uneven distribution of internet access by providing affordable and convenient connectivity to the rural population. In 2013, 84.6% of rural residents reported using mobile internet, making the cell phone the most popular internet device among rural users (CNNIC, 2015). With the increasing computing power of smartphones, mobile devices are no longer just communication tools for making phone calls and sending messages, but can also be used to accomplish more complex tasks. Seeing the potential of mobile devices in the diffusion of ICT, many scholars are optimistic about the role of mobile internet in improving people's well-being in developing countries (Ling & Donner, 2009). However, some research suggests that the information gap between different groups of internet users can hardly be solved by merely introducing affordable and flexible wireless internet. For example, some researchers argue that the mobile phone is inferior to the desktop computer in many aspects, including low technological capabilities and poor platform designs (Napoli & Obar, 2014). Critiques of mobile internet might underestimate the potential for designing further digital innovations for mobile devices. However, they rightly warn policymakers about the gap between mobile access and internet usage, and between macro-level policy design and micro-level ICT adoption.

In recent years, China has also seen the rise of technology giants such as Tencent, Alibaba, and Baidu. While the government-led informatisation projects facilitate the construction of technology infrastructure, technology companies in China have designed internet products that are mobile-friendly, and have encouraged the adoption of mobile applications (apps) among new internet users.

Take, for example, WeChat, the most popular social media application in China. WeChat is tailored by its developers to be suitable for smartphone screens. Launched in 2011, it has already attracted more than 900 million monthly active users. WeChat is one of the first 'Swiss-army-knife' (multi-functional) mobile apps in China. It has many functions beyond taking or making video calls and sending or receiving messages. It is also an information integrator, where users can subscribe to

mainstream media or independent media accounts (Harwit, 2017). During Chinese lunar new year in 2014, WeChat added a new function to its app, WeChat Wallet, to give and receive monetary gifts in the festive season. This became a hugely successful feature. The widespread adoption of WeChat Pay also helps to offer the 'unbanked' population a banking solution in remote areas of China.

Meanwhile, Taobao, a platform developed by Alibaba, has transformed how Chinese users shop. Taobao is China's largest online shopping platform, featuring multiple Taobao stores, virtual shops operated by individuals or companies. Such e-commerce websites were first popular with urban consumers to buy books, clothes and home appliances. The range of products and services available online soon expanded to include almost everything consumers need. More than 10% of Chinese retailers have an online presence, 3% more than in the US (Clark, 2016).

However, the development of e-commerce in rural areas in China is lagging behind its urban counterparts due to the lack of coverage of logistic services and equivalent digital skills. In 2018, rural business owners only accounted for around 10% of all online retailers on Alibaba's e-commerce platforms.[1] The grassroots adoption of digital technologies in China has reflected the rural–urban divide. The internet is increasingly changing the economy, yet there is a widening digital divide in the extent to which users can participate in capital-enhancing activities online.

1.3 The PPP model in the development of ICT in China

Given the limitations in both government-led and grassroots approaches to technology development, the Chinese government recently started to partner with the private sector in the development of the ICT industry. One main area of public-private collaboration is in developing e-commerce in rural areas.

In 2015, to improve the coverage of logistic services and the supply of e-commerce talents in rural China, the Chinese Ministry of Commerce published an action plan for the development of rural e-commerce.[2] Meanwhile, technology companies introduced business models and strategies, or promoted online shops opened by rural entrepreneurs.

The development of rural e-commerce in China is often linked to the concept of 'Taobao Village' – online hubs using Alibaba infrastructure and training. The villages have more than 100 Taobao stores with individual shop owners, accounting for more than 10% of households in the village, and with annual sales more than 10 million RMB (AliResearch Institute, 2014). According to the World Bank Group (2019), between 2014 and 2016, the number of Taobao Villages increased from 212 to 3,202.

[1] https://36kr.com/p/5140528

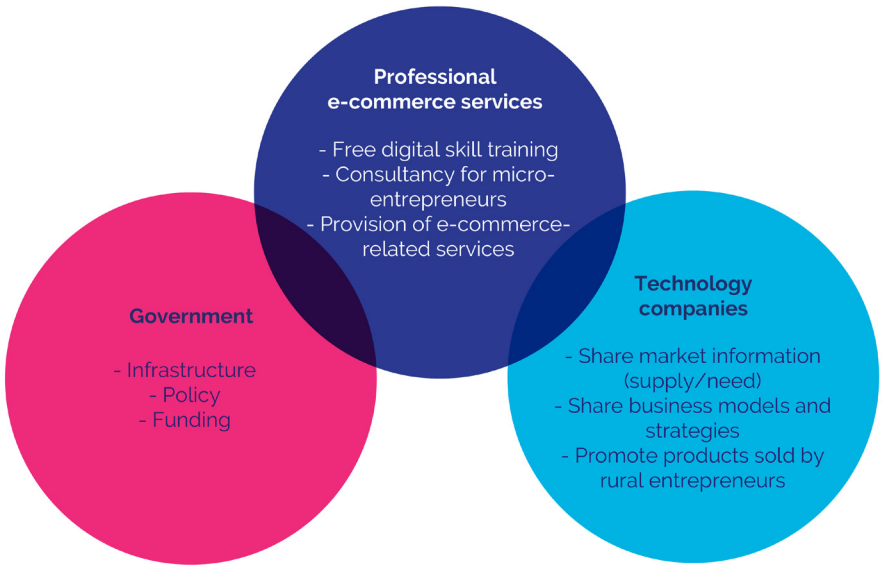
[2] http://interview.mofcom.gov.cn/detail/201605/20008.html

The development of rural e-commerce is also a part of poverty alleviation projects in the least developed regions (World Bank, 2019; The State Council Leading Group Office of Poverty Alleviation and Development, 2016). For these projects, government policies focus on the development of internet infrastructure, electronics and logistic networks. Migrant workers, females and village officials in impoverished villages are encouraged by local government to participate in digital skills workshops so that they can start online businesses to sell their agricultural products. Multiple government departments in central government are involved, including the Departments of Agriculture, Transport, Informatisation, and Social Services.

There have been more challenges with the development of rural e-commerce in Central and Western China than in Eastern China, where the local market economy is advanced. Local governments in developing provinces have formed a different PPP model (Nanjing University School of Architecture and Urban Planning & Alibaba Research Centre for Rural Dynamics, 2018) where the county government provides funding to hire professional services to help tailor e-commerce business strategies for villages. Services include free digital skills training for villagers, consultancy for micro-entrepreneurs, and the provision of e-commerce-related services, such as creating online shops, designing logos, offering customer services, and delivering packages. Local governments provide funding to build digital training centres in villages, while private companies offer ICT workshops tailored to rural entrepreneurs. The new model bridges public and private sectors by co-designing e-commerce centres in villages.

This model has proven to be more successful in Henan Province than previous government- or company-initiated models. What distinguishes the model from previous e-commerce development projects is the focus on upskilling farmers with equivalent digital skillsets to participate in the e-commerce industry. Trainers from technological companies are also crucial to the success of the model, as they can share first-hand e-commerce experience and deliver up-to-date market information.

Figure 2: A PPP in Henan province, Central China



2. Methods

2.1 Field Site: E-commerce in Fossil Village

The data analysed in this paper was collected by the author during six months of fieldwork in rural China, between spring and autumn of 2017. The field site, Fossil Village, is located in Central China, Henan Province. This site was chosen for its convenient location and demographic representativeness: Henan represents a typical Chinese province, due to its large population (more than 95 million people) and its location in Central China. It bridges the remote West and the developed East.

Situated in Central China, the economic development of Henan lags behind the prosperous eastern provinces in the coastal area, and yet is more advanced than inland provinces in Western China. It has the largest percentage of rural residents (51.5%) in China, 9.3 percentage points higher than the national average (42.2).

Fossil Village is located at the bottom of Fossil Mountain. It is located 27 kilometres southwest of the county centre. Household income in Fossil Village traditionally comes from agricultural production, including wheat, sweet potatoes and corn. In the 2000s, village leaders introduced shitake mushrooms as a new income source. Each household now grows and maintains 5,000 to 10,000 packages of mushrooms per year, making an annual profit of 10000 to 30000 RMB. In 2014, the local government began the 'E-commerce for Villages' programme and encouraged local farmers to sell their products on digital platforms such as Taobao or JD.com.

To help facilitate this, the government provided e-commerce training workshops – e-commerce incubators in rural Chinese villages. The e-commerce workshops provide free training programmes focusing on general IT skills, the introduction of new e-commerce platforms, and marketing skills for digital commerce. The government partners with 19 e-commerce companies to offer e-commerce incubators in towns and villages.

2.2 Survey and interviews

To gather data about how participants in the e-commerce workshops benefit from digital skills training, I surveyed 32 participants during a digital training session in the summer of 2017. I then conducted six in-depth follow-up interviews, (three females and three males), six months after the training session.[3]

Survey respondents were recruited immediately after one of the training sessions. They all gave oral consent to participate in the study.[4] Interviewees were recruited during my ethnographic fieldwork in the village. All interviewees either showed great interest in e-commerce or had already started online businesses. Interviews were conducted in the village centre, each lasting between 30 minutes and an hour.

The aim of the interviews was to address the following questions related to the PPP model:

- What digital skills do users want to learn from the workshops?
- What aspects of the model did they find most useful?
- What are the limitations of the model?

[3] However, to evaluate the accessibility of the PPP training, I also interviewed villagers who did not attend the training but have strong intentions of starting e-commerce businesses.

[4] The research project was ethically reviewed and approved by the University of Oxford.

3. Findings

3.1 The role of the PPP in e-commerce incubators in rural China

Unlike previous informatisation training in China, which is often organised and delivered by local government agricultural information centres, the e-commerce workshops involved local government, a major e-commerce company (Alibaba) and private e-commerce service companies. To provide local residents with necessary equipment (computers and warehouses), the local government funded the purchase of ICT equipment and invested in building an incubator.

Park of Hundreds of Mushrooms is one e-commerce company that the local government has partnered with to set up 19 e-commerce incubators in towns and villages.[5] Each e-commerce incubator is tailored to the needs of local farmers. For example, some aim to help farmers to sell kiwi fruit while others sell mushrooms. I used one of these incubators as a source for the survey and interview data.

Park of Hundreds of Mushrooms specialises in providing e-commerce training and logistic services. It uses its own mushroom-growing business as a training ground for participants to learn e-commerce skills, general ICT skills such as PC/mobile phone operation, document processing, and other skills. Although trainers specialised in Alibaba e-commerce, the course also provides case studies on other e-commerce platforms, such as JD.com, or social media e-commerce.

The Park of Hundreds of Mushrooms centre has warehouses for growing and storing mushrooms. It rents spaces in the warehouses and mushroom-growing tents to villagers. During the harvest season, the company helps farmers sell the mushrooms on its e-commerce platform. By selling fresh or dried mushrooms at a large scale, the company helps farmers improve their bargaining power in the domestic or international market, and gain higher profits.

The Park of Hundreds of Mushrooms is located in the centre of the town, and the local government runs a free shuttle bus for rural participants. Workshops are organised every month, some targeting rural residents with no or little e-commerce experience, and others tailored to online business owners who have more than two years of e-commerce experience. Workshops and courses offered in the incubator are free of charge to local residents aged under 40 years old. However, as my interview results suggest, many middle-aged and elderly villagers are also passionate about e-commerce business but are unable to participate in the training.

Taobao University provides teachers and materials for courses on general computer skills, introduction to the e-commerce market, and management of the online store (with a view to the stores being managed by trainees and farmers). The courses are also tailored to the local context, which includes experiences and strategies of selling agricultural products on e-commerce platforms. Thus, while the local government provides funding for the construction of the incubator, the technology company, Taobao, provides intellectual resources and teaching materials for digital skills training, and the private e-commerce service companies (such as Park of Hundreds of Mushrooms) manage the day-to-day maintenance of the centre.

[5] The county with the field site has a population of 450,000 and 17 towns. Towns are usually located in the centre of a circle of several villages.

Figure 3: Participants of the digital skills workshops with student volunteers

Figure 4: Shelves of mushrooms growing in the warehouse of the e-commerce incubator

3.2 What types of digital skills do rural users need for e-commerce?

Previous informatisation plans in China mainly focused on the construction of ICT infrastructure, and often neglected the provision of training to help rural users benefit from digital technologies. The new PPP model, which involves technology companies and e-commerce service companies, aims to fill the gaps in digital skills training and narrow the rural–urban divide in digital competencies.

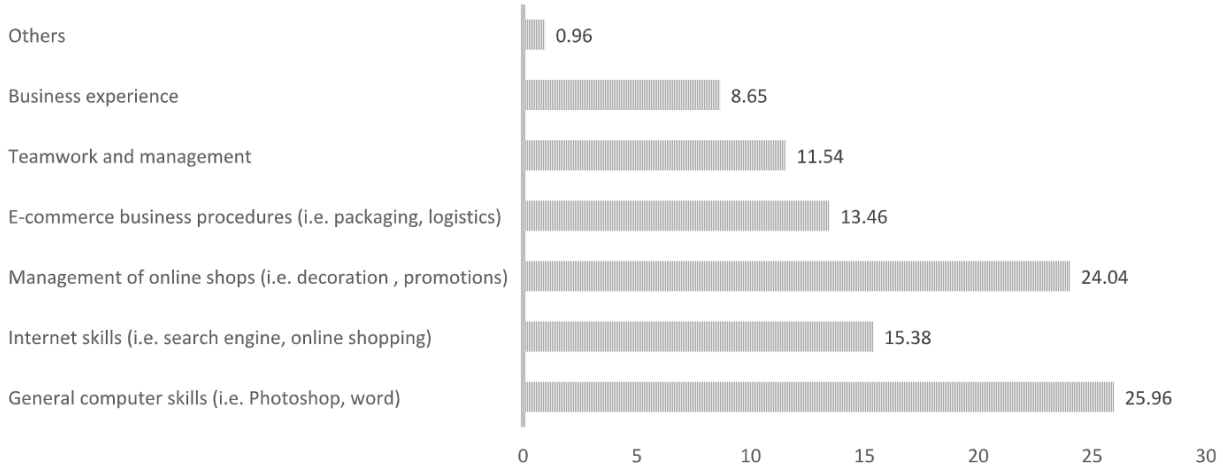
I collected survey data on what types of digital skills are needed by rural internet users to start e-commerce businesses online.

Of the surveyed participants in the e-commerce workshop in the summer of 2017, 22% had already started running an e-commerce business online before taking the training session. Among the users who had started online businesses, more than 70% had started their online business within the last year.

The survey revealed that rural participants had the highest need for courses on general computer skills (25.96%). Knowledge of e-commerce business procedures (24.04%) and internet skills (15.38%) ranked as the second and the third most appreciated information. The survey also found that digital skills for using PCs might not be essential for everyday online activities, such as watching videos or playing games, but they are crucial for running e-commerce businesses. It also revealed that the e-commerce incubator is an important workspace for villages:

- 31.25% of the participants do not have computers at home
- 30% of these do not have plans to buy one in the next two years.

Figure 5: Survey results of information needs among workshop participants (N = 32)



3.3 Feedback from the participants

3.3.1 Offline barriers for the development of rural e-commerce

While the PPP did help to solve logistical problems by providing a public warehouse for rural residents, there remained some barriers for rural business owners. For example, many lacked information about the market, or faced disadvantages in competing with middle- to large-sized Taobao online stores that offer lower prices for the same products.

Running online stores from rural areas is challenging. One interviewee described the challenges she faced in logistics and online sales:

> "Since I started the online shop in 2016, I have always been struggling with the daily management of the online shops. The incubator provides logistics for use, but the cost of running an online business is beyond my previous estimation. For example, when the packages break on the way to delivery, I have to refund the customers. Because I mainly sell beverages made by a local brewery, I can barely make any profit [...] Another problem I encounter is the market price. I have been trying to lower the price of my products to compete with other online stores that sell similar products. However, since this year, I found that all of my competitors have a lower price for the product than my store, probably because they could get cheaper logistics. The sales from my Taobao store amounted to almost zero in 2017." (R1)

Apart from the challenges of competing with larger stores' lower prices, agricultural products such as mushrooms are difficult to sell online. As many interviewees mentioned, urban consumers are often concerned with food safety and prefer to purchase groceries from larger online retailers or local supermarket. While the local government aims to promote the rural economy through e-commerce, many participants in the workshops could not find products from local areas to sell online:

> "The workshop shows us that having an e-commerce team is better than working alone. However, finding a business partner is extremely hard if you live in a mountain village. I tried to post on online forums, looking for a reliable partner to sell agricultural products together, but most of the replies discourage me from continuing selling mushrooms online. Some internet users reached out to me and want me to become their local sales representative. It's just so hard to find any opportunities." (R6)

Meanwhile, the digital training workshop is not accessible to everyone. Officials in the villages require all participants to be under 40 years old. However, in my interviews with villagers who are eager to learn e-commerce skills, some are older than 40; they have high school diplomas; some have experience managing traditional businesses and are motivated to start e-commerce businesses with their adult children. As one of the female interviewees explained:

> "I already have an idea of running a business online, but when I signed up for the digital skills workshop, I was told that only villagers aged below 40 years old could participate. Now, I try to learn what the workshop teaches from my neighbours, who attend training every day. I have plans to sell local agricultural products such as dried shitake mushroom online, but the application procedure for people like me (aged above 40) is very complicated." (R3)

Due to the restriction on age limit, local residents aged above 40 years old need approval from the county officials to participate in the session. This bureaucratic process has stopped many middle-aged villagers from participating in the digital training. The digital training should be more inclusive to benefit different social groups in rural China.

3.3.2 Digital skills training beyond e-commerce

Many interviewees mentioned that, although the digital skills training sessions were mainly focused on e-commerce, the most important thing they learnt from the training was advanced knowledge about digital platforms. In particular, the Taobao University experts offered useful insight into how e-commerce works:

> "This [digital skills training workshop] is the first free course I took that is related to the use of the internet. I have always used the internet for social networking and entertaining. The workshop gave me a comprehensive introduction to fundamental structures behind the internet, such as the ranking algorithms of products on Taobao, or the strategies of displaying products on the front pages. After learning from the workshop, I became a more informed customer online. I also shared what I learnt from the workshop with my colleagues. We all found it useful for e-commerce and for online shopping." (R4)

Compared to information services provided by local government, the involvement of the private sector in providing digital skills training means that there is likely to be more market-related information at the workshop. One interviewee mentioned that tutors in the workshop explained the process of opening an online shop on Taobao, and also briefly compared Taobao with other e-commerce platforms, including social media e-commerce and JD.com.

> "Knowledge about all the digital platforms for e-commerce is useful. After the workshops, I did my own research on the deposits I need to invest in different platforms." (R5)

4. Discussion and conclusions

Developing countries have witnessed a boom in digital technology adoption. Digital innovations such as online search engines, social media and e-commerce platforms have profoundly transformed the ways people socialise, seek information, and manage businesses every day. Meanwhile, the development of e-commerce in the most impoverished communities in developing countries is still lagging behind urban areas. Both the public and private sectors have tried to bridge the digital divide in the use of ICTs for e-commerce. Nevertheless, experience from China shows that both the top-down approach of government-led infrastructure development and the market-driven approach of grassroots adoption of technologies could not eliminate the rural–urban divide in e-commerce.

Consequently, China has adopted a new model that tries to combine the strengths of the public sector in providing funding and policy guidance, with the advantages of the private sector in offering market information and professional training. This PPP model is implemented in my field site, Fossil Village in Central China, and has received both positive and negative feedback from participants.

Three stakeholders are involved in planning digital skills training workshops: the local government, technology company (Taobao), and an e-commerce service company. Compared to previous PPP models that only involved the government and one technology company, this new model has ensured the provision of more diverse services for rural e-commerce entrepreneurs, ranging from ICT facilities, digital skills training, to logistics services and – in this case – mushroom tents. Nevertheless, as the survey results suggest, many participants in the training started their e-commerce businesses without basic computer skills, such as the use of text- or image-processing software, and lacked general knowledge of digital platforms.

In-depth interviews with villagers show that the PPP model could not solve some of the barriers that exist offline:

- Despite support from the incubator centre, rural entrepreneurs still face higher costs of logistics than urban business owners.

- Most of the rural agricultural products are hard to sell online without strategic business plans to promote products on the platform.

- Finding business opportunities and partners is also challenging living in rural areas.

- More importantly, the workshops have restrictions on the age of participants, which excludes many enthusiastic villagers in their 40s or 50s who are interested in e-commerce and have basic computer literacy for online business.

The findings suggest that the collaboration between government and technology companies could not change the fundamental social inequalities between rural and urban areas in developing countries.

Investment in facilities such as logistic networks, ICT infrastructure, and agricultural technologies are crucial for social development in the region. As Payal Arora (2019) warns in her book, *The Next Billion Users*, investment in political and economic development in poor communities should not be replaced by funding for new technologies. Nevertheless, the model has explored a new perspective for policymakers and social workers. The in-depth interviews with participants showed that training on e-commerce skills delivers not only technical knowledge, but also information beyond digital skills – by sharing market information with local farmers. beyond the current curriculum. With substantial funding from local government and experienced teaching from technology experts, villagers enjoy improvements in digital skills that can improve their market competitiveness and enhance economic performance for the future.

As China transforms from a primarily agricultural and manufacturing economy to a service-based digital economy, the future of its digital economy will depend on whether millions of Chinese internet users can adapt to the digital transformation of labour. In this study, we have seen e-commerce training in rural China provided through government-led training workshops, in collaboration with national e-commerce platforms and local e-commerce service companies. However, the study found that participants in the training program still need supporting resources, such as more affordable logistics services, more advanced knowledge about the digital economy, and technical assistance in managing online businesses. Nevertheless, the collaboration between the public and private sector is a crucial step in the process of upgrading rural internet users' digital skills in e-commerce and will have policy implications for other developing countries in the Global South.

References

Alibaba Research Institute. (2017). Report on the e-commerce development in rural China [中国淘宝村研究 报 告], viewed 17 Jan 2020, < http://www.aliresearch.com/Blog/Article/detail/id/21242.html >

Arora, P. (2019). The next billion users: Digital life beyond the West. Cambridge, Massachusetts: Harvard University Press.

Clark, D. (2016). Alibaba: The House that Jack Ma Built. New York: Harper Collins Publisher.

CNNIC. (2015). 农村互联网发展状况研究报告. [Report on Rural Internet Development].

CNNIC. (2019). 第44次中国互联网络发展状况统计 [The 44th China Statistical Report on Internet Development]. Retrieved from http://www.cnnic.cn/hlwfzyj/hlwxzbg/hlwtjbg/201908/P020190830356787490958.pdf

General Office of the State Council of the People's Republic of China. (2006). 关于印发<2006—2020年国家信息化发展战略> 的通知 [2006-2020 National Informatisation Strategy], viewed 17 Jan 2020, < http://www.gov.cn/gongbao/content/2006/content_315999.htm >

Guo, Y., & Chen, P. (2011). 'Digital Divide and Social Cleavage: Case Studies of ICT Usage among Peasants in Contemporary China'. The China Quarterly, 207, 580-599. doi:10.1017/s030574101100066x

Harwit, E. (2017). 'WeChat: social and political development of China's dominant messaging app'. Chinese Journal of Communication, 10(3), 312-327. doi:10.1080/17544750.2016.1213757

Ling, R., & Donner, J. (2009). Mobile communication in everyday life: new choices, new challenges. Cambridge: Polity Press.

Nanjing University School of Architecture and Urban Planning, & Alibaba Research Centre for Rural Dynamics. (2018). 中国淘宝村发展报告. Retrieved from <http://cif.mofcom.gov.cn/cif/html/upload/20190215102541912_中国淘宝村发展报告(2014-2018).pdf>

Napoli, P. M., & Obar, J. A. (2014). 'The Emerging Mobile Internet Underclass: A Critique of Mobile Internet Access'. Information Society, 30(5), 323-334. doi:10.1080/01972243.2014.944726

Ministry of Commerce of the People's Republic of China. (2008). 财政部、商务部关于印发《家电下乡推广工作方案》的通知 [The announcement of the working plan on promoting the sales of domestical applicants in rural China], viewed 17 Jan 2020, <http://www.gov.cn/gongbao/content/2006/content_315999.htm>.

The State Council Leading Group Office of Poverty Alleviation and Development. (2016). 关于促进电商精准扶贫的指导意见 [Guidelines for targeted poverty alleviation through e-commerce development], viewed 17 Jan 2020, < http://www.cpad.gov.cn/art/2016/11/23/art_624_55721.html >.

Ting, C., & Yi, F. (2013). 'ICT policy for the "socialist new countryside"—A case study of rural informatization in Guangdong, China'. Telecommunications Policy, 37(8), 626-638. doi:10.1016/j.telpol.2012.03.007

World Bank. (2019). 中国农村电商扶贫：从基层发展到政府和社会资本合作 [E-commerce and the alleviation of poverty in China: From rural development to public-private partnership], viewed 17 Jan 2020, < https://blogs.worldbank.org/zh-hans/eastasiapacific/e-commerce-poverty-alleviation-rural-china-grassroots-development-public-private-partnerships>

Zhou, X. (2011). 'The Road to Collective Debt in Rural China: Bureacracies, social institutions and public goods provision'. Modern China, 38(3), 271-307. doi:10.1177/0097700411416216

Appendices

Appendix A: translated survey questionnaire

Q1: Have you started an e-commerce business before the training (including Taobao shop or WeChat business)?

Yes/No

Q2: If you have started an e-commerce business, how long have you been running the business?

Less than a year
Between 1~3 years
Between 3~5 years
More than 5 years

Q3: Please select the digital skills that you aim to learn from this training.

Basic computer operation skills (i.e. editing text or images)
internet use skills (i.e. using search engines, Taobao e-commerce platform)
Online business skills (i.e. decorating the online store, planning online promotions)
Business management skills (i.e. logistics, packaging, and distributing)
Team management skills
Business ideas and experiences
Other (please specify in the text box)

Q4: Please select the internet platform that you are planning to use for e-commerce.

Taobao
WeChat
JD
Other (please specify in the text box)

Q5: Do you have a computer at home?

Yes/No

Q6: If 'No' in Q5, do you have plans to buy a computer in the next two years?

Yes/No

Q7: Do you have mobile internet access on your phone?

Yes/No

Q8: Please recall your internet experiences in the last 7 days. What is your main internet device?

Mobile phone
PC
Tablets

Q9: Before attending this training session, was your mobile phone your only internet access?

Yes/No

Q10: Please recall your internet experiences in the last 7 days. How many hours did you spend online per day?

Q11: Please recall your internet experiences in the last 7 days and choose the frequency of using the following mobile/PC functions. (1 = never use; 2 = rarely use; 3 = use sometimes; 4 = use frequently)

Text editing
Image editing
Sending or receiving messages
Using search engines
Playing games
Voice or video chats
Using social media platforms
Listening to music or watching TV
GPS or navigation
Reading online news
Using online financial services
Online shopping
Reading e-books
Taking online courses

Q12: Please read the following statements about the internet and evaluate if they fit your online experience (1 = strongly disagree; 2 =disagree; 3 = agree; 4 = strongly agree)

I am confident in my internet skills
I am not familiar with the functionalities of PC or mobile phones
I could not understand the online content
I need help from others to use the internet
I help others to use the internet

Q13: [optional] please leave your contact information if you are willing to participate in a follow-up interview.

Q14: Please select your role in this training session:

E-commerce trainer/entrepreneur
Volunteers
E-commerce trainee

Q15: Please select your gender:

Male/Female

Q16: Please write down your year of birth.

Q17: Please select your highest education level.

Primary or middle school
High school
Undergraduate or occupational school
Graduate school

Appendix B: information about interviewees

Table 1: Survey interviewees

Interviewee	Age	Gender	E-commerce experience
1	35	Female	Participated in the digital skills training session in 2016
2	46	Male	Helps his son to run an online shop on Taobao
3	51	Female	Wants to start a business online but did not participate in the digital skills training session because of her age
4	30	Male	Participated in the digital skills training session in 2016. (Also has a part-time job in a tourist centre)
5	40	Male	Participated in the digital skills training session in 2017
6	30	Female	Participated in the digital skills training session in 2017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