

## THE EMERGENCE OF SELF-ORGANIZING E-COMMERCE ECOSYSTEMS IN REMOTE VILLAGES OF CHINA: A TALE OF DIGITAL EMPOWERMENT FOR RURAL DEVELOPMENT<sup>1</sup>

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*The emergence of Alibaba's Taobao (e-commerce) Villages in remote China has challenged the assumption that rural, underserved communities must always be the recipients of aid to stimulate ICT-enabled development. Based on an in-depth case study of two remote villages in China, this research note shows how ICT (e-commerce) can empower a marginalized community, giving rise to a rural e-commerce ecosystem that can aid self-development. We propose the concept of digital empowerment to explicate our findings in the exploration of community-driven development: first, we identify the critical actors of a rural e-commerce ecosystem and how they use ICTs; second, we illustrate how the same ICT can be used for different affordances by the actors in the evolution of a rural e-commerce ecosystem. The paper also presents unintended consequences of rural e-commerce development. We conclude with suggestions on how to make ICT useful for rural development and, in doing this, challenge some of the prevailing theoretical arguments about this process.*

**Keywords:** ICT-enabled rural development, rural e-commerce ecosystem, digital empowerment, social consequences of ICT, case study

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### Introduction

Today, many rural residents, especially in developing countries, continue to live in deprived conditions, with limited

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The appendix for this paper is located in the "Online Supplements" section of the *MIS Quarterly's* website (<http://www.misq.org>).

access to education, healthcare, and economic opportunities (IFAD 2011). Such deprivation, which discriminates against or excludes rural communities, often results in out-migration to cities for better opportunities. This not only results in societal impacts like rural hollowing and empty nest family issues (United Nations 2013), but also perpetuates the vicious cycle whereby growth concentrates in urban areas and social cleavage deepens between rural-urban areas. Since the 1990s, ICT has been promoted as a way out of such deprivation (Njihia and Merali 2013), for example, by offering iso-

lated communities access to education (e.g., distant learning), healthcare (e.g., telemedicine), and markets (e.g., e-commerce).

These **ICT-enabled developments** can be categorized as falling into one of two types. The first is the top-down professional development approach, which views the community as a list of problems and needs (Kretzmann and McKnight 1993). To address local deficiencies, government, NGOs, and social enterprises play a key role in driving development by providing leadership, financial resources, and technical assistance. However, some commentators have expressed concern that this creates dependency of a disadvantaged community on these external actors, which may undermine development that should be freedom-enhancing and sustainable (Sen 2008). Also, it is posited that long-term social change requires the emergence of local leaders (Ersing 2003). Hence, the second approach, **community-driven development**, is proposed (Leong et al. 2015; Mansuri and Rao 2004). This approach, whereby the community drives its own development, has several advantages; for example, grassroots movements can gain momentum more rapidly, and the community is less likely to feel it is being forced into participation (Coetzee 2010). Despite its benefits, little empirical evidence of such an approach is available.

In this research note, we consider the recent emergence of e-commerce villages in rural China, which epitomizes ICT-enabled development driven by a community. Besides offering an empirical example, this study is important for two reasons. First, little is known about ICT-enabled development driven by a community, other than the need for local leaders (Ersing 2003). In exploring the emergence of these e-commerce villages, we take an inclusive view by studying the ecosystem of rural e-commerce (Krause et al. 2009). The concept of ecosystem provides a basis for understanding how different roles emerge, adapt, and align over time (Moore 1993), thus allowing us to identify the critical actors who help to create social change, and their interactions with ICT. Second, it allows us to understand the interaction between ICT and underprivileged communities because rural villagers have often been left out of studies of the digital revolution. Thus, rural villagers are unlikely to respond to the same interventions that are experienced in urban settings. In a nutshell, we present two cases of e-commerce villages in rural China to address the research question: How does ICT create and empower critical actors in a marginalized community?

## Methodology

The case study methodology is adopted because it is appropriate for such exploratory research (Pan and Tan 2011;

Siggelkow 2007). Our data are collected from interviews and archival data. To strengthen our findings, we study two villages: Suichang and Jinyun in Zhejiang Province. Table 1 shows the economic conditions and e-commerce of the villages. From our preliminary analysis, the two villages had similar economic woes, ICT, critical actors, and impacts of ICT on economic performance, but different e-commerce product offerings (Suichang villagers sell agricultural products while Jinyun villagers sell outdoor gear which leverages neither the natural resources nor the traditional skills of the villagers) and different approaches to ICT-enabled development (i.e., the orchestrated approach led by Suichang's grassroots association and the organic approach led by Jinyun's pioneer e-tailer). Their similarities and differences can enhance the reliability of our findings. In July and August 2013, we visited the villages and conducted semi-structured interviews and focus group interviews with the leaders of e-commerce, villagers, and government officials (n=63). We also participated in the first Taobao Village Forum in December 2013 to exchange views with representatives from other e-commerce villages, Chinese experts in rural development, and government representatives. Details of the methodology can be found in the appendix. We next present an overview of the villages, and specific aspects of ICT that support the rural development in each case.

## E-Commerce Villages in Suichang and Jinyun

In China, rural underdevelopment is a top priority, because it has led to social issues such as the migration of 260 million workers to cities, elder-care issues, and education problems of 61 million "left-behind" children (CCR CSR 2013). Despite remarkable progress, often stimulated by programs initiated by central and local governments, these issues persist. Programs such as the Integrated Village Development are marred by shortcomings of the top-down approach, including poor targeting and low participation (World Bank 2009). Moreover, the reliance of China on macroeconomic growth to raise rural income is hard to sustain (Sicular 2013). The rise of e-commerce villages in remote China, better known collectively as Taobao Villages, offers a potential solution. Taobao is a Chinese online marketplace, equivalent to eBay. Operated by Alibaba (NYSE:BABA), China's largest e-commerce company, three out of four online sales in China occur on Taobao. With this consumer-to-consumer site, Alibaba facilitates the participation of rural people in small businesses and many of them have become successful, just like the online store-owners who rang Alibaba's IPO opening bell in September 2014. Coined by Alibaba, Taobao Village refers to a village in which at least 10 percent of its residents operate an online store, generating annual sales of at least 10

<b>Villages</b>	<b>Suichang</b>	<b>Jinyun</b>
Initial Economic Conditions (as of 2009)	<ul style="list-style-type: none"> <li>• One of the 26 less developed counties in Zhejiang Province</li> <li>• More than 70% of the 50,000 population are farmers and have not attended high school</li> <li>• 18,564 rural residents were living with annual per capita net income of less than 2,500 yuan (USD 400)</li> </ul>	<ul style="list-style-type: none"> <li>• A county with the highest number of poor villages in the province</li> <li>• More than 92 percent of the population work in the agricultural industry</li> <li>• Half of the population lives with an annual per capita per income of less than 2,500 yuan (USD 400)</li> </ul>
Product Offerings on Taobao and Increased Income	<ul style="list-style-type: none"> <li>• Villagers sell agricultural products such as bamboo shoots, tea, sweet potatoes, and wild herbs online</li> <li>• More than 1,500 online stores in Suichang, generating annual sales of 110 million yuan (USD 17.7 million) in 2013</li> </ul>	<ul style="list-style-type: none"> <li>• Villagers sell outdoor equipment such as tents, backpacks, sleeping bags, and barbeque pits online</li> <li>• About 1,300 online stores, generating annual sales of 450 million yuan (USD 72.4 million) in 2013</li> </ul>

<b>Actors</b>	<b>Roles and Examples from the Case</b>
Grassroots Leaders	<p>Villagers or grassroots organizations who initiate, lead, and shape the development of an e-commerce ecosystem. They are key actors who provide initial support (e.g., training, product supplies) for the emergence of e-tailers.</p> <p><i>Suichang Online Association (Suichang), Mr. Lv (Jinyun)</i></p>
E-tailers	<p>Villagers who sell products through e-commerce.</p> <p><i>Mr. Mao, Mr. Huang, Mrs. Liu, Mr. Zuo, Ms. Yi (Suichang), Mr. Lv, Mr. Rui, Mr. Yang, Mr. You, Mr. Wei, Mr. Jie (Jinyun)</i></p>
E-Supply Chain Partners	<p>Villagers who produce, supply or distribute products that are sold via e-commerce.</p> <p><i>Mr. Wu, owner of an agricultural cooperative, Mrs. Zhou, pig farmer (Suichang), Mr. Lv, manufacturer and distributor, Mr. Fu, distributor (Jinyun)</i></p>
Third-Party E-Commerce Service Providers	<p>Villagers who provide services to support e-commerce operations, making it easier for e-tailers to do business. Services include logistics and delivery, packaging, marketing, website and graphic design, photography, and customer service.</p> <p><i>Mr. Ying, owner of an express delivery company, Mr. Wang, employee of an express delivery company (Suichang), Ms. Ling, graphic designer (Jinyun)</i></p>
Institutional Supporters	<p>Institutional stakeholders who play a functional role in improving infrastructures such as road transport and telecommunication services, and a symbolic role in providing legitimacy for entrepreneurial risk taking.</p> <p><i>Lishui Municipal Committee of the Communist Youth League (Suichang), Jinyun County Committee the Communist Youth League (Jinyun), China Mobile (telecommunication company)</i></p>

million RMB (USD 1.6 million). As of end 2014, about 280,000 job opportunities had been created in rural China. In this study, we examine the development of the e-commerce ecosystem in two rural villages across three stages: birth, expansion, and self-renewal (Moore 1993). Critical actors of each stage and the interaction between the actors and technology are summarized in Tables 2 and 3, and the details are provided in the following text.

### **Birth of Rural E-Commerce Ecosystem**

E-commerce in Suichang began in 2006 and gained its popularity after the establishment of the grassroots Suichang Online Shop Association in March 2010. With e-commerce, the once-isolated villagers can access consumers directly, without layers of middlemen. As described by Mr. Lin (a pseudonym, as are all names in this paper), the president of an

<b>Table 3. Digital Empowerment in Developing Ecosystems for Rural Development</b>		
<b>Digital Empowerment</b>	<b>How ICT elevates the role of critical actors</b>	<b>Implications of ICT use for critical actor and community behavior in the ecosystem</b>
<b>Stage of Ecosystem Development: Birth</b>		
ICT allows for reconfiguration of interdependencies  <i>Critical actor: Grassroots Leaders</i>	ICT allows disintermediation in the distribution channel by enabling villagers to replace the layers of supply chain middlemen	ICT use leads to a <b>new fitness landscape</b> <ul style="list-style-type: none"> <li>Actors can lead the development of the ecosystem by initiating the change in exchange relationships and by providing support to the community</li> <li>Community is aware of and become interested in the possibilities of e-commerce with the early involvement, demonstration, and help of grassroots leaders</li> </ul>
ICT allows for visibility of involvement  <i>Critical actor: E-tailers</i>	ICT allows villagers to learn about e-commerce by enabling them to notice that someone is working from home	ICT use leads to <b>quick diffusion of knowledge</b> <ul style="list-style-type: none"> <li>Actors can learn about e-commerce by observing actions of the leaders or pioneers of e-commerce</li> <li>Community has greater knowledge of and confidence in the potential of e-commerce with the visibility of e-tailers work and operations of e-commerce</li> </ul>
<b>Stage of Ecosystem Development: Expansion</b>		
ICT allows for platform generativity  <i>Critical actor: E-Supply Chain Partners</i>	ICT allows the evolution of work by enabling a dynamic operational infrastructure	ICT use leads to the <b>evolution of roles</b> <ul style="list-style-type: none"> <li>Actors can focus on specific work along the supply chain by leveraging their pre-existing skills or based on the needs of the ecosystem</li> <li>Community can participate in e-commerce more easily with the ease of obtaining supplies of e-commerce product</li> </ul>
ICT allows for openness to participation  <i>Critical actor: Third-Party E-Commerce Service Providers</i>	ICT allows diversification of work by enabling the participation in different capacities	ICT use leads to the <b>diversification of roles</b> <ul style="list-style-type: none"> <li>Actors can choose to offer services, other than products, in e-commerce by leveraging their skills or based on the needs of the ecosystem</li> <li>Community can participate in e-commerce more easily with the availability of operational and managerial services</li> </ul>
<b>Stage of Ecosystem Development: Self-Renewal</b>		
ICT allows for role repositioning  <i>Critical actor: Institutional Supporters</i>	ICT allows for a conducive commercial environment by enabling institutional actors to redefine their role in driving rural development	ICT use leads to a <b>supportive environment</b> <ul style="list-style-type: none"> <li>Actors can overturn their conventional role as institutional players (e.g., directive role of government, profit-maximization of businesses) which is not effective</li> <li>Community has greater autonomy in their own development with the support of various institutions</li> </ul>
ICT allows for substitutability of products  <i>Critical actor: E-tailers</i>	ICT allows people to tailor e-commerce to their needs by removing dependency on existing (natural) resources	ICT use leads to <b>adaptation of product offering</b> <ul style="list-style-type: none"> <li>Actors can replicate the same business model with different products</li> <li>Community perceives more options with the rise of e-tailers selling different products</li> </ul>

agricultural cooperative, “The same product are sold for 15 or 20 yuan per catty in the city, but the farmers can get only 2 or 3 yuan. With e-commerce and the help of the association, the market is expanded.” Back in 2006, while local governments were promoting e-commerce to rural farmers, Mr. Pan, the chairman of the association who returned from Shanghai, thought that it would be difficult for his low-skilled neighbors to transform into e-tailers. Therefore, villagers were offered

free e-commerce training, including pricing, photo shooting and editing, and marketing strategies. More than 3,000 people were trained by the association. Within a year, the number of online stores in Suichang increased from 300 to nearly 1,000. With the help of the association, Ms. Zhu, a 48-year-old roadside seller who previously did not even know how to turn on a computer, learned to start an online store that later earned her a good monthly income.

In Beishan village of Jinyun, a significant number of e-tailers are selling outdoor equipment such as tents, backpacks, and outdoor shoes provided by BSWolf, the online store owned by Mr. Lv. Since 1999, Lv had been selling clay oven bread, making a humble living. In 2006, he learned about e-commerce from his friend. With his hard-earned savings of 4,000 yuan (USD 640), he started an online store with his younger brother. Initially, he obtained supplies of outdoor equipment from the wholesale market and made money from the price difference. As Lv recalled,

In the beginning, we only managed to get one order a week. As the sales slowly picked up, we continued to explore how to manage the online store. Our relatives and neighbors were curious....Later, some people asked us how to start an online store. We felt embarrassed to turn them away, so we showed them how to register.

It is evident in the above illustrations that rural residents are confronted with environmental constraints in impoverished regions, especially their distance to the market. Based on this observation, we argue that **ICT allows for reconfiguration of interdependencies**. ICT enables villagers (e.g., the grassroots association of Suichang and Mr. Lv of Jinyun) to replace the layers of middlemen, thus allowing disintermediation in the distribution channel. This gives rise to the emergence of *grassroots leaders*: villagers or grassroots organizations initiating, leading, and shaping the development of an ecosystem. They lead the development by initiating changes in exchange relationships and by providing support to the community. The disintermediation and reconstruction of networks change and reform the fitness landscape, allowing for the participation of villagers and thus survival in the new ecosystem. As a result, the community becomes aware of and interested in the possibilities of e-commerce.

In the early stage of e-commerce development, a lot of the Suichang villagers noticed the emerging trend of e-commerce in their vicinity. More and more of their relatives, friends, and neighbors were doing business with e-commerce. Almost all of them worked from home by converting living rooms into workspace and stores. Mr. Mao, who previously worked in the city, said, "When I came back to my hometown two years ago, I saw many people doing business on Taobao. So I decided to give it a try." He owned two online stores selling bamboo charcoal, a famous product of Suichang and made about 40,000 yuan (USD 6,400) sales a month. Similarly, Mr. Huang, currently an owner of four Taobao stores, began to sell online when he observed that many local people had ventured into e-commerce.

In Jinyun, according to Mr. Lv,

Our relatives and neighbors were curious about what we were doing at home with a computer. They often saw us bringing the goods back home. Our working hours are very different from them; we work until midnight so that we can serve late night shoppers.

More importantly, he has influenced his fellow villagers, with his successful transformation from a clay oven bread seller to an online entrepreneur driving a BMW car. Mr. Rui, who previously worked as a lathe machine operator, saw the success of Lv as his possible future. Mr. Rui, whose online store generated about 10 million yuan (USD 1.6 million) of sales in 2013, recalled

I had a tough time when I first started with online selling. I almost gave up. However, the success of Lv gave me confidence. I persisted, and I really made it.

The above description suggests how persistent marginalization has adverse effects on social-cultural values: rural villagers are often resistant to change and have low efficacy due to poverty and little exposure to the outside world. Based on this observation, we assert that ICT can empower the community because **ICT allows for visibility of involvement**: ICT enables villagers to notice that someone is working from home, thus allowing villagers to learn about e-commerce. This gives rise to the growth of *e-tailers*, or villagers who sell products through e-commerce. They can learn about e-commerce by observing actions of the grassroots leaders or pioneers of e-commerce. This transparency, coupled with the significant improvement in the livelihood of those who are engaged in e-commerce, gradually gives rise to an entrepreneurial climate in the villages. As a result, the community has greater knowledge of and confidence in the potential of e-commerce.

### **Expansion of Rural E-Commerce Ecosystem**

At this stage, many villagers in Suichang who were interested in e-tailing faced the problem of product supply because it was hard for them to negotiate for a low price when they started as a small business. Hence, the association helped to coordinate the supply and demand. Mr. Yue, deputy chairman of the Suichang Online Association, explained,

Suppliers [farmers] only need to focus on production and the e-tailers can count on us to negotiate with

big suppliers. We can bargain for a better price since we purchase in large quantity from the producers.

As such, novice e-tailers could obtain product supplies from the association in a smaller quantity, yet at a low cost. Furthermore, the consolidation of orders alleviated farmers' frustrations with layers of middlemen who previously reduced profits on their sales. As illustrated by Mr. Wu, a young owner of a cooperative that supplied flower tea,

I used to think that being a farmer had no future. But with the help of the association, the 1,200 association members are just like my sales agents. While they focus on selling the products, I will spend my energy on producing.

In 2011, the association provided supply-chain, photography, and online helpdesk services. This alleviated the feeling of uncertainty in the community, as expressed by Mrs. Zhou, a 43-year-old pig farmer,

In the past, it was impossible to sell my three pigs in one day! I had to have a part-time job. Now, I am planning just to focus on my pig farm. Anyway, the sales will not be a problem.

In Jinyun, capital was a key concern. After spending a few thousand yuan on a computer, villagers still needed to purchase goods. Many were hesitant, worrying that they might not be able to sell well after investing. Sympathizing with his fellow villagers, Lv offered them the option of obtaining goods from him because he would have some stock available. This allowed villagers to obtain orders first and then to purchase items from Lv, who earned a marginal amount selling to these e-tailers. Later, in 2008, Lv decided to establish his own brand—the BSWolf of today—and manufacture his own products. From this point in time, the distributor-agent model began to take shape. He was not only the e-tailer, but also the supplier of products to many e-tailers in his village. One of the sellers was Mr. Yang, a military veteran, who was able to make 4 million yuan (USD 640,000) sales in 2013 selling BSWolf products, while taking care of a parent and two children at home. The product source and subsequent services such as the website design template and photos provided by BSWolf have made e-tailing easy, even for disabled people like 35-year-old Mr. You, who “talks” to his customers with only his active left thumb (due to muscular atrophy). By engaging these e-tailers as his agents, Lv's sales network expanded. In 2013, BSWolf's total sales were about 50 million yuan (USD 8 million).

A critical issue in rural development is the lack of education and skills, and hence the low occupational mobility. In this regard, **ICT can provide a platform that encourages generativity**: ICT provides a dynamic operational platform that allows the evolution of existing roles. This gives rise to the emergence of *e-supply chain partners*, or villagers who produce, supply, or distribute products that are sold via e-commerce. They can focus on a specific task along the production supply chain by leveraging their preexisting skills or based on the needs of the ecosystem. As a result, the community can participate in e-commerce more easily. In other words, ICT provides a basis for actors to constantly adapt to changes such that they can cooperatively and competitively sustain an ecosystem (den Hartigh and Tol 2008).

As the number of e-tailers and e-supply chain partners increased with the development of e-commerce, there was a growing need for e-commerce related services and expertise such as photography, graphic design, packaging, logistics, and delivery. In Suichang, such emergent demand posed an opportunity for villagers like Mr. Ying. He was already an e-tailer and saw a new opportunity and decided to establish an express delivery company, which handled 500 parcels a day. At least 300 people of Suichang were working in the delivery industry, including Mr. Wang, who returned from Shanghai. He said, “Although many people are selling products online, I choose to go into the logistics industry. I took a differentiating path.” The availability of these e-commerce services further encouraged the involvement of more villagers in e-commerce. Mrs. Liu, for instance, who previously worked in Hangzhou (the provincial capital of Zhejiang), returned home in 2010 to sell bamboo charcoal online because Suichang has a more comprehensive delivery service.

In Jinyun, young people working in cities, like Ms. Ling, also felt encouraged by the opportunities of e-commerce. In 2013, the 26-year-old design graduate returned home to Jinyun and worked for an online store as a graphic designer. She earned approximately 3,000 yuan (USD 480) a month, which was acceptable to her because the cost of living in rural areas was lower. At the same time, rural residents like 48-year-old Ms. Zhao, who previously made little money from selling breakfast food, choose to work for an owner of a Taobao store as a customer service representative. The logistics and delivery services in Jinyun also flourished. Mr. Wei, a 24-year-old intern at Lv's company, started his own online store with his wife when the logistic costs came down. They earned what they considered to be a decent income of 10,000 yuan (USD 1,600) a month by selling outdoor equipment supplied by BSWolf.

In rural areas, villagers typically have limited choice in relation to careers. From the above observation, we can say that

**ICT can allow for openness to participation:** ICT enables the participation of villagers in different capacities, thus allowing diversification of work. This gives rise to *third-party e-commerce service providers*, or villagers who provide services to support e-commerce operations in villages. They can choose to offer services, other than products, in e-commerce by leveraging their skills or based on the needs of the ecosystem. As a result of their existence, a community can participate in e-commerce more easily with the availability of operational and managerial services, which some villagers may not be good at but at which others can thrive. As such, feelings of uncertainty in exploring e-commerce among the community are relieved, enhancing villagers' belief in their efficacy (Thomas and Velthouse 1990).

### **Self-Renewal of Rural E-Commerce Ecosystem**

When e-commerce began to take shape in Suichang, the municipal government also took an active role. In 2011, with the support of the Lishui Municipal Committee of the Communist Youth League, the association was able to set up MyStore, a shopfront of about 1,000 local agricultural products offering supply-chain services, at a low rental cost. The relevant department also assisted farmers and cooperatives with subsidies for fertilizers, pesticides, and irrigation equipment. In September 2012, an online entrepreneurship campaign was launched with a series of workshops, competitions, and forums in order to encourage the villagers to participate in e-commerce. The prosperity from e-commerce activity also hastened infrastructure improvement, supported by local government and telecommunication operators. By 2012, nearly all villages had broadband or mobile Internet access and a cheaper Internet access rate was given to villagers who ventured into e-commerce. As of June 2013, the members of the association comprised 1,268 e-tailers, 164 product suppliers, 45 third party service providers such as logistics companies, design shops, and photography studios, and e-commerce has generated annual sales of 110 million yuan (USD 17.7 million) for Suichang.

In Jinyun, the municipal government focused on providing support and governance. According to the director of Huzhen Town Commission of Commerce (E-Commerce),

We organized the first large-scale training session for the locals in 2010. We invited trainers from Alibaba and more than 100 people participated. It also provided a platform for the e-tailers to meet the local product suppliers.

In addition, the government provides monetary incentives to encourage e-tailers to establish a brand and trademark for

their products. As the deputy secretary of Lishui Municipal Committee of the Communist Youth League recalled,

When I first visited this village in 2011, it was covered with muddy and gravel roads. Not only has the infrastructure improved, the economic performance is remarkable.

As the competition heightened, Jinyun emerged to become one of the areas with the cheapest delivery rates, further lowering the entry barrier for subsequent followers. Telecommunication companies were also encouraged to invest in the Internet infrastructure, and the villagers now enjoy a 100 MB broadband.

The further development of (rather than initial stimulation of) e-commerce requires the support of government and infrastructure providers. From the above observation, we suggest that **ICT can allow for role repositioning:** ICT enables institutional stakeholders to redefine their traditional role, from a leader of rural development to a facilitator of a conducive entrepreneurial environment. This gives rise to the emergence of *institutional supporters*, who play a functional role in improving infrastructures such as road transport and telecommunication services, and a symbolic role in providing legitimacy for entrepreneurial risk taking. With ICT, their conventional role in planning or directing rural development can be overturned. As a result, the community has greater autonomy in their own development but with the support of a commercially conducive institutional environment.

Besides agricultural products, e-tailers in Suichang also sold other products via e-commerce. Eighty-year-old Mr. Zuo, one of the Taobao's oldest retailers, started an online store to sell the stamps that he collected over the years. "My life is richer and more colorful with Taobao," said Zuo. Retailers like Mrs. Yi and Ms. Zhu were also encouraged by the trend. While Ms. Zhu sold self-made shoe insoles, Mrs. Yi's online store focused on selling kids' wear. Mr. Wu, the owner of an agricultural cooperative, was also planning to venture into food processing, "We hope to further process the flower tea that we plant into food products like biscuits and sell it online." The once desolate villages are now filled with a vibrancy coming from the growing aspiration of the people, engendering a lively and hopeful climate in the villages.

In Jinyun, the distributor-agent model that contributed to the success of BSWolf was imitated by another group led by Mr. Fu. Said Fu, who made 50 million yuan (USD 8 million) sales in 2013,

During a trip back home to Jinyun, I learnt about Lv's distributor-agent model. I think this is a good

business model. Coincidentally, I have a friend selling car accessories. So we thought we could try it out.

He gathered a few good friends to pool together their orders, and to negotiate a better price from the supplier. Thereafter, each of them focused on selling certain products in their online store to avoid competition, and to help establish a brand. According to one of the e-tailers, Mr. Jie, who made 2 million yuan (USD 322,000) sales in 2013, “There are a few hundred types of car accessories. I can just focus on a few.”

Rural development is typically dependent on single, extractive industries such as agriculture, forestry, mining, etc. (Green 2010). From this observation we can say that **ICT can allow for substitutability of products** in rural e-commerce development: ICT removes the dependency on existing (natural) resources, thus allowing people to tailor e-commerce to their needs. This gives rise to e-tailers who are selling a variety of products, rather than one dominant product. From agricultural products in Suichang to outdoor equipment in Jinyun, and then the further diversification of product offerings in each village, it is clear that villagers engaged in e-commerce can tailor their activities to the available resources and observed needs when deciding products to be sold in Taobao. As a result, the community perceives more options and possibilities. This adaptation of product offerings could also eventually enhance the ecosystem resilience to external change and internal tensions (Krause et al. 2009).

## Unintended Consequences of E-Commerce Development in Rural Villages

Unexpectedly, e-commerce development in rural villages has some negative consequences. First is the **reoccurrence of out-migration during rural e-commerce advancement**. With the accelerating development, the limited capacity of the villages (for example, in terms of space and human capital) becomes a stumbling block for further advancement. In Jinyun, home-based e-tailers complain about the limited space for storage and working stations. Big players like Lv have had no choice but to move the company to the town. Suichang also faces a constraint from a lack of workforce skills, due to the difficulty of attracting outside talent; they have had to shift their non-farming operation to nearby cities. While ICT has improved the outlook in terms of work opportunities and encouraged migrant workers to return to their home villages, these later shifts of operations away from the villages have triggered the concerns of local officials and families. This scalability issue of rural e-commerce sparked

much discussion in the 2013 Taobao Village Forum. People worried that the voluntary out-migration as a result of e-commerce advancement will again cause population out-flow, and thus dash the expectations of the villagers.

The second undesirable consequence is **the risk of environmental degradation to the rural landscape**. When economic development intensifies, it is hard to balance it with environmental protection. As is evident in the history of industrialization, fast-paced, large-scale development without care often results in the destruction of natural resources such as air, water, and soil. In Suichang and Jinyun, at least 8 to 10 logistics companies have been set up; in Jinyun alone, the number of parcel deliveries per day has hit 25,000. Road traffic in the villages has increased sharply, posing a threat of air pollution. Furthermore, local village leaders are planning an industrial park to accommodate offices and warehouses. Such large-scale construction will unavoidably bring new environmental challenges to the natural landscape.

The third unexpected impact is the **affected social relationships amid intense competition in e-commerce**. In illustrating the fierce competition in Suichang, Mr. Ying said, “As e-commerce develops, some delivery companies engage in price war, disregarding the service quality. This kind of destructive competition seldom happened in the past.” Often, e-tailers are confronted with similar situations especially when many of them have the same product source. As much as distributors like Mr. Lv have tried to impose a minimum-price rule among the agents, it is difficult to eliminate this problem of competition, which can result in reduced profit margins and further friction in the harmonious communal life of the rural community.

## Implications and Conclusions

This paper presents a revelatory case of ICT-enabled rural development that demonstrates the principle of “by the community for the community” (Coetzee 2010), and offers two contributions. First, we identify critical actors in a rural e-commerce ecosystem and show how ICT is used by them at different stages. In contrast to aid recipients, it is evident that rural communities, when empowered by ICT, can become the drivers of change. Besides local leaders, our study identifies that there are a number of interdependent players involved in creating social change, providing an inclusive view of a rural e-commerce ecosystem. Second, we illustrate how the same ICT (e-commerce) can have different affordances for different actors in the evolution of the rural e-commerce ecosystem. Drawing on the idea of relational concepts that link people and technology (Majchrzak and Markus 2013), we posit that



a technology affords different patterns of use and consequences for rural communities that have little prior exposure to ICT and have minimal trust in doing business over the Internet, compared to urban residents. Our study presents six aspects of ICT, elucidating the interaction between ICT and marginalized communities. The paper also presents unintended consequences of e-commerce development in rural villages.

Albeit preliminary, our findings provide the basis for challenging prevailing theoretical arguments. First, we argue that our study challenges the dominant view of ICT as an operand resource (Nambisan 2013) in development and the affirmative, positive stance of these studies. This perspective has to be expanded by positioning ICT as an operant resource, a resource capable of acting on other resources to contribute to value creation, instead of simply a resource that requires action taken upon it (Nambisan 2013). Also, unintended impacts of ICT in bringing vast changes to peoples' lives warrant the attention of the IS community (Majchrzak and Markus 2013). Second, given the roles of grassroots leaders in our study, there may be a need to expand Markus's (2001) chauffeur theory since the leaders are not only information coordinators, but also ecosystem orchestrators and the source of motivation. Third, considering the technological artifact of e-commerce as a boundary object, we need to understand that it is more than an *intermediary channel* that connects separated entities such as the rural villagers and urban customers. The prevalent view of technology as a relatively fixed bridging device in boundary spanning theory needs to be expanded, as e-commerce in our case is also an evolving artifact that is shaped by the actors (Park and Boland 2012). It provides a *space for common actions* that mobilizes the participation of the various actors. Finally, although existing studies generally define a digital ecosystem as a software-based ecosystem, our study suggests a definition that encompasses the broad array of actors and roles that constitute an e-commerce ecosystem. This broader definition will enable us to generate a better understanding of ICT-enabled transformation in different economies.

Based on this brief paper on ICT-empowered rural development, we conclude by providing suggestions on how to make ICT useful for rural development. We posit that practitioners need to move beyond emphasis on providing access and training. From the experience of Suichang and Jinyun villages, rural regeneration that leverages e-commerce requires the emergence of grassroots leaders in order to showcase the viability of rural e-commerce in the early stages. Later, an operational infrastructure comprised of product supplies and various e-commerce services is required to lower the barriers for rural villagers. Concomitant unintended impacts from the rapid development of these villages also draw attention to

sustainability issues. For instance, practitioners have to consider solutions to rising competition among the villagers. With the advancement of e-commerce, a local community needs to work with institutional actors (e.g., government), who play an important role in resolving the constraints of space, finance, and human capital. In contrast to a development project where a rural community is "designed" to be the online seller, the emergence of a self-organizing ecosystem in these rural villages has strengthened the sense of self-reliance and confidence in determining their own future.

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## THE EMERGENCE OF SELF-ORGANIZING E-COMMERCE ECOSYSTEMS IN REMOTE VILLAGES OF CHINA: A TALE OF DIGITAL EMPOWERMENT FOR RURAL DEVELOPMENT

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## Appendix

### Methodology

This study examines an emerging, significant, yet rare, phenomenon with regard to the social consequences of ICT (Majchrzak et al. 2013). In this regard, a qualitative, case study research methodology is adopted because it is appropriate for such exploratory research (Siggelkow 2007) and allows us to unearth the answer to our “how” question in a context-rich environment (Pan and Tan 2011; Walsham 1995). Our choice of case study methodology is also supported by the common use of such contextually anchored methods in the field of ICT for development (ICT4D) (Walsham and Sahay 2006), a field that emphasizes the “goals of relevance” (Burrell and Toyama 2009, p. 86). Given the nascent state of knowledge on our topic of interest, we adopt an interpretive approach (Klein and Myers 1999; Walsham 1995). By using the existing knowledge of the empowerment perspective as a theoretical lens that serves as a “sensitizing device to view the world in a certain way” (Klein and Myers 1999, p. 75), this interpretive approach not only allows us to conduct the study and data analysis with certain expectations based on prior theory, but also allows new, unexpected findings that are not identifiable at the outset of the inquiry to emerge from the data (e.g., Ravishankar et al. 2011; Tan et al. 2015). Accordingly, the theoretical lens of empowerment serves as an initial guide to design and data collection, and is involved as part of an iterative process of data collection and analysis (Walsham 1995).

To enhance the reliability of our exploratory findings, two villages in Zhejiang Province—Suichang and Jinyun—were selected from the 21 Taobao Villages identified by Alibaba. The two villages share some commonalities and differences. They have similar economic woes, ICT, critical actors, and impacts of ICT on economic performance, based on our preliminary analysis. However, they have different e-commerce product offerings and different approaches to ICT-enabled development. Besides location, the 21 villages are different in terms of their product dependency on the natural advantage of the villages. While some rely heavily on the conducive natural environment in producing quality agricultural products for e-commerce sales (e.g., Suichang villages), some leverage on the traditional or cultural skills of the villagers (e.g., Wantou village that sells straw-made hand-woven craft) and other villages depend on their geographical advantage (e.g., Qingyanliu village, which is near a famous wholesale city of China). At the same time, there are also villages that offer products without leveraging natural resource or environment (e.g., Jinyun that sell outdoor equipment). Suichang and Jinyun villages form a good contrast of such dependency

within the same province (i.e., the cultivator-based product of Suichang and the non-cultivator-based outdoor equipment of Jinyun). In addition, they demonstrate differences in the approaches of their ICT-enabled development: in Suichang, the development is driven by the systematic and planned actions by a grassroots association, while the development in Jinyun is driven through a process of discovery and learning by the pioneer e-tailer.

## **Data Collection**

Our data were collected from two primary sources: interviews and archival data. At the end of April 2013, we read about news regarding Taobao Villages in “weibo,” China’s most popular Twitter-like microblog. After contacting key leaders and government officials of Suichang and Jinyun counties, we visited the villages in July and August 2013, and conducted semi-structured interviews and focus group interviews. During the trip, we traveled more than 700 km by land after we had arrived in Yiwu airport in Zhejiang to visit the homes, farms, offices, warehouses, and factories of online sellers in the villages. In total, 63 villagers and administrators were interviewed, including the grassroots leaders of e-commerce, e-tailers, e-commerce service providers, telecommunication companies, and government officials (see Table A1). The interviewees were primarily identified by the grassroots leaders and officials, such as the head of the county, after understanding our research purpose. The interviews were led by one lead interviewer who was a native speaker in the local language. Whenever the interviews were conducted in focus groups, the interviewer would ensure that everyone expressed their views, to avoid dominance of particular individuals (David and Sutton 2011) and group conformity (Babbie 2007). All of the interviews were recorded and transcribed, amounting to 199 pages of transcripts and more than 1,000 photos.

Additionally, we collected archival data such as online articles, news, reports, and videos. Table A2 summarizes the sources of secondary data. We relied on the Internet and weibo as primary channels, and we searched for archival data dated from January 2006 to September 2014, primarily with the search term “Suichang Taobao Village” and “Jinyun Taobao Village.” We attempted to look for archival data as early as in 2006, because the e-commerce adoption in one of the villages (Suichang) began then, according to the interviewees. Nonetheless, most of the archival data was published in 2013 and 2014 after the Taobao Village took shape, and the Ali Research Center, which was operated by Alibaba, published a report that populated the concept of Taobao Village in late 2013 (i.e., “Taobao Village Investigation Report” in Table A2). In particular, the archival data were included in our analysis only when it was relevant to the development of Taobao Village as a general phenomenon, or when it was relevant to the development of Suichang and Jinyun villages. In total, 352 pages of archival data were collected. Additionally, we participated in the first Taobao Village Forum organized by Alibaba in Zhejiang on December 27, 2013, to exchange views with representatives from other Taobao Villages, China experts in rural development, and government representatives. We further reviewed top IS and sociology journals for relevant constructs and arguments that could form the “sensitizing device” (Klein and Myers 1999) with reference to the phenomenon of interest in this study.

## **Data Analysis**

Data analysis began during the data collection (Eisenhardt 1989; Pan and Tan 2011). The empowerment literature sensitized us to the related information regarding the three dimensions of empowerment—structural, psychological, and capability empowerment (Jacques 1996; Lee and Koh 2001; Spreitzer and Doneson 2005)—which correspond to different aspects of challenge in rural development. We summarized in tabular form the relevant information on the actions taken by the community with respect to the development of the two villages and the changes that have occurred over time. Using the summary table as the primary corpus of data, we proceeded to identify the critical actors across three stages of ecosystem development of Suichang and Jinyun villages: birth, expansion, and self-renewal (Moore 1993). Subsequently, we ask specific guiding questions in deriving our findings: how ICT elevates the person’s role in the community or how ICT makes certain people, who previously were not critical to the community, critical actors in the emerging ecosystem, and what behaviors have been changed as a result of ICT use. In doing so, we derive tentative concepts that could provide an encompassing explanation to affordances of ICT in a rural community. This was done independently for each village, with the three dimensions of the empowerment serving the categories of analysis. In doing so, we attempted to search for and explicate the new “regularities in social life” (Babbie 2007, p. 11) from an emerging phenomenon, along the lines of enquiry offered by our sensitizing concepts.

Next, in order to examine and identify the “underlying coherence” (Taylor 1976, p. 153) through our interpretation, we juxtaposed tentative explanations for each village, in preparation for further “abstraction” of tentative concepts that might explain overall the actors of the ecosystem, and the empowerment enabled by ICT. The integrated analysis allowed us to derive concepts that were closely related to the context of the village. An example of the abstraction was the identification of grassroots leaders as a key ecosystem actor that exists in both villages (i.e., the association established by natives of Suichang, and Mr. Lv in Jinyun). A further illustration was the conceptualization of the affordance of ICT in allowing for substitutability of product. This was evident through the success of selling both the cultivator-based product of Suichang

<b>Table A1. List of Interviewees</b>			
<b>Government Unit/Company/Association</b>	<b>Position, Name (Pseudonym)</b>	<b>Number of Interviewees</b>	<b>Remarks</b>
<b>Lishui (Number of interviewees: 32)</b>			
Suichang Online Shop Association	Chairman, Mr. Pan	1	The association is established by the natives to promote e-commerce.
Suichang Online Shop Association	Deputy Chairman, Mr. Yue	1	
Suichang Online Shop Association	Project Manager	1	
Taobao online store	Owner	3	
Taobao online store	Manager	1	
Taobao online store	Owner and Head of operations	2	
Taobao online store	Staff	1	
Third-party operation service provider	Founder	1	
Yunda Logistics company	Employee, Mr. Wang	1	
Suichang WangCunKou Town Wuchu Village Rural Post Station	Staff	2	The e-commerce service stations are established by Suichang Online Shop Association to help villagers with online purchasing.
Suichang WangCunKou Town ZhongGen Village Rural Post Station	Staff	1	
Villager	NA	1	Villager who use the services at the e-commerce service stations.
Lishui Rural E-Commerce Service Center	Director	1	This center offers training, technical support, marketing advice relevant to e-commerce
Lishui Municipal Committee of the Communist Youth League	Secretary	1	
Lishui Municipal Committee of the Communist Youth League	Deputy Secretary	1	
Lishui Administration for Industry and Commerce	Director of Marketing Division	1	
Lishui Municipal Human Resources and Social Security Bureau	Employment Secretary	1	
Lishui Municipal Commission of Economy and Informatization	Assistant Director	1	
Lishui Municipal Commission of Commerce	Representative	1	
Lishui Municipal Bureau of Agriculture	Deputy Director of the Agricultural Marketing Center	1	
Lishui Municipal Office of Agriculture and Rural Work	Deputy Director of Department of Economic Development	1	
Lishui Municipal Finance Bureau	Representative	1	
People's Bank of China Lishui	Representative	1	
China Unicom Lishui	Representative	1	Telecommunication Company
China Mobile	Representative	1	Telecommunication Company
Suichang Administration	Head of Suichang County	1	
Suichang Administration of Quality Supervision	Director	1	
Suichang Bureau of Agriculture	Deputy Director	1	

<b>Table A1. List of Interviewees (Continued)</b>			
<b>Government Unit/Company/Association</b>	<b>Position, Name (Pseudonym)</b>	<b>Number of Interviewees</b>	<b>Remarks</b>
<b>Jinyun (Number of interviewees: 31)</b>			
Taobao online store - BSWolf Outdoor Products Co., Ltd. (outdoor equipment)	Owner, Mr. Lv	1	The grassroots leader who started the online business of outdoor equipment; main seller of outdoor equipment
Taobao online store (an agent of BSWolf selling outdoor equipment)	Owner and 3 staff	4	The owner is the younger brother of Mr. Lv
Taobao online store (an agent of BSWolf selling outdoor equipment)	Owner	2	
Taobao online store (an agent of BSWolf selling outdoor equipment)	Owner and 2 staff	3	
Taobao online store (an agent of BSWolf selling outdoor equipment)	Owner and staff	2	
Taobao online store (car accessories)	Owner, Mr. Fu, CEO, and staff	3	Seller and distributor of car accessories
Taobao online store (car accessories)	Owner, Mr. Jie	1	
Taobao online store (female shoe)	Owner	1	
Taobao online store (rack)	Owner, Mr. Rui	1	
Taobao online store (electrical appliances)	Manager and staff	2	
E-commerce training center	Founder	1	
Jinyun County Committee the Communist Youth League	Secretary	1	
Jinyun County Committee the Communist Youth League	Deputy Secretary	1	
Party Committee of Huzhen Town	Member	1	
Huzhen Town Commission of Commerce (E-commerce)	Director	1	
Huzhen Town Administration for Industry and Commerce (E-commerce)	Supervisor	1	
Jinyun Online Shop Association	Chairman	1	
Jinyun Online Shop Association	Deputy Chairman	1	
Jinyun Online Shop Association	Secretary	1	
Jinyun Online Shop Association	Member	2	
Total number of interviewees		63	

and the non-cultivator-based outdoor equipment of Jinyun via e-commerce. As we proceeded, each cycle of the abstraction and visitation of the empirical data improved the clarity of explanations as a better understanding of the data and the theory was developed in this inductive reasoning process. The cycle was reiterated until all of the tentative explanations were accounted for, and a temporal internal agreement was achieved.

With the emergence of our findings, we consistently ensured the alignment between data, theory, and findings (Klein and Myers 1999) until the findings were finalized. To ensure the convergence of interpretations by interviewees, the rule of triangulation (Dubé and Paré 2003) was applied: multiple data sources (interviews, focus groups, and archival data) were used to filter “false preconceptions” of interviewees and researchers; this ensured consistency of data. Throughout the data collection and analysis, we applied Klein and Myers’s (1999) principles to conduct interpretive work.

<b>Table A2. Archival Data</b>	
<b>Category</b>	<b>Details</b>
Municipal Government's Website	<p>Report of Lishui Municipal Committee of the Communist Youth League (Special issue of E-Commerce in Rural Areas) <a href="http://www.lsh54.gov.cn/tkjb.asp">http://www.lsh54.gov.cn/tkjb.asp</a></p> <ul style="list-style-type: none"> <li>• Issue 2013, 23 Apr</li> <li>• Issue 2013, 10 Jul</li> <li>• Issue 2013, 22 Aug</li> <li>• Issue 2013, 1 Nov</li> <li>• Issue 2014, 20 Jan</li> </ul> <p>Huzhen Town's Website (2012, 2 Mar). Huzhen Town: The Rise of E-Commerce, <a href="http://www.jinyun.gov.cn/xz/hzz/dzxx/t20120302_796826.htm">http://www.jinyun.gov.cn/xz/hzz/dzxx/t20120302_796826.htm</a></p> <p>The State Council Information Office of the People's Republic of China (SCIO) (2012, 9 May). Press Conference: Poverty Alleviation and Development in Zhejiang Province, <a href="http://www.scio.gov.cn/xwfbh/gssxwfbh/xwfbh/zhejiang/Document/1154922/1154922.htm">http://www.scio.gov.cn/xwfbh/gssxwfbh/xwfbh/zhejiang/Document/1154922/1154922.htm</a></p>
<b>News/ Magazine Articles</b>	<p>JY News (2011, 17 Jul). Jinyun Push Forward Projects for Low-income Farm Households, Retrieved 28 Jan, 2014 from <a href="http://jynews.zjol.com.cn/jynews/system/2011/06/17/013881971.shtml">http://jynews.zjol.com.cn/jynews/system/2011/06/17/013881971.shtml</a></p> <p>GBTimes Online Radio (2012, 2 Oct). Suichang strives for e-commerce success, Retrieved 27 Jan, 2014 from <a href="http://gbtimes.com/business/suichang-strives-e-commerce-success">http://gbtimes.com/business/suichang-strives-e-commerce-success</a></p> <p>Shanghai Financial News (2012, 30 Oct). 27 Crown Store Hidden in A Small Village, Retrieved 28 Jan, 2014 from <a href="http://www.shfinancialnews.com/xww/2009jrb/node5019/node5051/tzbw/userobject1ai102193.html">http://www.shfinancialnews.com/xww/2009jrb/node5019/node5051/tzbw/userobject1ai102193.html</a></p> <p>Qingnian Shibao (2012, 5 Nov). 65 Taobao Online Stores in A Village, Led by A Clay Oven Bread Seller, Retrieved 25 Jan, 2014 from <a href="http://zj.sina.com.cn/news/d/2012-11-05/075930661.html">http://zj.sina.com.cn/news/d/2012-11-05/075930661.html</a></p> <p>JieFang Daily (2012, 8 Nov). Taobao Stores Hidden in the Villages, Retrieved 25 Jan, 2014 from <a href="http://newspaper.jfdaily.com/jfrb/html/2012-11/08/content_915560.htm">http://newspaper.jfdaily.com/jfrb/html/2012-11/08/content_915560.htm</a></p> <p>HuaShangWang.cn (2013, 21 Mar). "Farming" with Computer, Retrieved 4 Mar, 2014 from <a href="http://hsb.hsw.cn/2013-03/21/content_8489901.htm">http://hsb.hsw.cn/2013-03/21/content_8489901.htm</a></p> <p>People.com (2013, 17 Apr). The Pig Famers Challenge the "Order-based" Selling Online, Retrieved 4 Mar, 2014 from <a href="http://zj.people.com.cn/n/2013/0426/c351153-18548585.html">http://zj.people.com.cn/n/2013/0426/c351153-18548585.html</a></p> <p>People.com (2013, 24 Apr). The Boss of Delivery Company, Retrieved 7 Mar, 2014 from <a href="http://zj.people.com.cn/n/2013/0424/c351153-18534705.html">http://zj.people.com.cn/n/2013/0424/c351153-18534705.html</a></p> <p>People.com (2013, 24 Apr). The Boss of Agricultural Cooperative, Retrieved 7 Mar, 2014 from <a href="http://zj.people.com.cn/n/2013/0424/c351153-18534704.html">http://zj.people.com.cn/n/2013/0424/c351153-18534704.html</a></p> <p>Hangzhou Daily (2013, 24 Apr). The Return of the Young to Sell Sweet Potato, Retrieved 7 Mar, 2014 from <a href="http://hzdaily.hangzhou.com.cn/dskb/html/2013-04/24/content_1481664.htm?jdfwkey=cvgr2">http://hzdaily.hangzhou.com.cn/dskb/html/2013-04/24/content_1481664.htm?jdfwkey=cvgr2</a></p> <p>People.com (2013, 24 Apr). Easy to Get an Order, Difficult to Develop, Retrieved 7 Mar, 2014 from <a href="http://zj.people.com.cn/n/2013/0424/c351153-18534767.html">http://zj.people.com.cn/n/2013/0424/c351153-18534767.html</a></p> <p>Caixin Century (2013, 5 May). Zhejiang Resolving the Issues of Agriculture, Farmer and Rural Area, Retrieved 28 Jan, 2014 from <a href="http://magapp.caixin.com/2013-05-05/100523608.html">http://magapp.caixin.com/2013-05-05/100523608.html</a></p>

<b>Table A2. Archival Data (Continued)</b>	
<b>Category</b>	<b>Details</b>
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**Table A2. Archival Data (Continued)**

Category	Details
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<b>Reports</b>	<p>Ali Research Center. 2013. "Taobao Village Investigation Report," <a href="http://i.aliresearch.com/attachment/cms_article/Mon_1312/1_1649f0dafa3ffc6.pdf">http://i.aliresearch.com/attachment/cms_article/Mon_1312/1_1649f0dafa3ffc6.pdf</a></p> <p>Ali Research Center. 2013. "Suichang Mode Research Report – A Service-driven Rural E-commerce Development," <a href="http://i.aliresearch.com/file/20131030/%E9%81%82%E6%98%8C%E6%A8%A1%E5%BC%8F%E7%A0%94%E7%A9%B6%E6%8A%A5%E5%91%8APDF%E7%89%88%E6%9C%AC.pdf">http://i.aliresearch.com/file/20131030/%E9%81%82%E6%98%8C%E6%A8%A1%E5%BC%8F%E7%A0%94%E7%A9%B6%E6%8A%A5%E5%91%8APDF%E7%89%88%E6%9C%AC.pdf</a></p> <p>Ali Research Center. 2012. "White Paper on Agricultural E-commerce," <a href="http://i.aliresearch.com/attachment/cms_article/Mon_1301/113_5e51aa81f4a892c.pdf">http://i.aliresearch.com/attachment/cms_article/Mon_1301/113_5e51aa81f4a892c.pdf</a></p>
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