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Strengths of Chinese Rural Areas to Develop E-commerce Projects

(Full paper)

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ABSTRACT

It is important to use appropriate ways to develop e-commerce in rural areas. Despite numerous studies which have addressed barriers that rural areas in developing countries are facing, few studies can be found that were focused on strengths that rural areas could consider about when developing e-commerce. In this paper, we analyzed typical cases (as known as patterns) in Chinese rural areas where e-commerce have been developed in a quick, innovative and successful way. We analyzed these cases and proposed four strengths (i.e., Industry Strength, Resource Strength, Position Strength and Marketing Strength) that rural areas could use when developing e-commerce. Started from the strength, a framework named SASS (Strength, Aim, Subjects, and Solutions) which characterizes key elements to develop e-commerce in rural areas was identified. According to a review on ten such cases, we found that the four strengths and the SASS framework could help us understand such cases in a unified and organized way. Accordingly, reference can be obtained in a more efficient way for top-level design of e-commerce development in similar areas.

Keywords: E-commerce, developing countries, rural areas, strength.

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INTRODUCTION

During the past several years, e-commerce has been developed in a rapid way in Chinese rural areas. However, in many counties or villages, e-commerce infrastructure has been built and e-services have been applied in a similar way. This brought waste of resources due to unbalanced supplies and demands. Experts proposed that top-level design of e-commerce should be carried out based on specific characteristics of local area. Both barriers and strengths should be considered. Despite many research focusing on barriers and challenges that developed areas should pay attention to when develop e-commerce (Kshetri, 2008) (Lawrence and Tar, 2013) (Guo and Gao, 2017), there is few studies addressing which strengths such areas need to be considered when developing e-commerce. It is also unclear which important elements should be considered about when designing top-level e-commerce development route based on its strengths.

Researchers and practitioners summarized some successful cases in which e-commerce have been applied quickly and successfully in some Chinese rural counties (Taobao University, 2016). Such cases are well-known and called as "e-commerce patterns in counties" (Qiu, 2017) such as Yiwu pattern (Chen, 2014), Beishan pattern (Zhu, 2016). These cases are quite typical for three reasons. First, some counties have got high ranking in the development of e-commerce. Second, some counties have achieved dramatic economic growth after applying e-commerce even if they were quite poor and possessed little resources previously. Third, some counties have developed e-commerce in an innovative way.

There are some other researches focusing on such e-commerce patterns also. For instance, in (Zhou, 2015), the authors summarized core factors for each pattern. However, such factors were not abstracted from one single perspective. This makes it difficult for persons to communicate about them in a unified way, or refer to them in order to improve practical results elsewhere. In (Zeng *et al.*, 2016), three e-commerce development models in counties have been classified from the perspective of government support: Suichang pattern (building up industry associations and distribution platform), Chengxian pattern (micro marketing and resource integration), and Tongyu pattern (marketing operation and branding strategy). Despite innovative and concise insights in this article, government support can be thought as one kind of solution from the government perspective in order to develop e-commerce. It is something about the 'result', not the 'reason'. Therefore, there are limitations to obtain references from it elsewhere.

To address this issue, in this paper, we analyzed such cases, and proposed four primary strengths of counties that could be considered about when developing e-commerce. Further, we identified key elements for counties when designing the route of e-commerce development (Strength, Aim, Subjects and Solutions). The rest of this article is structured as below. In Section2, ten patterns of e-commerce development in Chinese counties are introduced. In Section 3, we discuss several related work, and in Section 4, the four strengths and the SASS route framework are introduced. Ten well-known e-commerce patterns in Chinese counties are reviewed in Section 5. Then in Section 6, we discuss about how SASS elements and industry strengths can be used for

understanding and designing e-commerce development in similar areas. Lastly, we discuss limitations and future work, and conclude this paper in Section 7.

BACKGROUND

Since the government's "Internet +" strategy was introduced in 2015, e-commerce has been developing vigorously in Chinese counties. This section introduces ten well known cases of e-commerce development in Chinese counties that appeared in earlier stage: Yiwu pattern, Haining pattern, Qinghe pattern, Chengxian pattern, Suichang pattern, Tongyu pattern, Tonglu pattern, Wugong pattern, Beishan pattern, and Shaji pattern.

Yiwu Pattern

Yiwu is a miracle of China's economy (Ali, 2013a). In July 2013, Forbes Chinese Network announced that Yiwu has become the richest county-level city in China with a per capita disposable income of more than 40,000 yuan. In 2005, Yiwu was the largest wholesale market of small commodities in the world according to authoritative agencies such as the United Nations. As a new productive force, e-commerce has been continuously integrated into the traditional business economy of Yiwu, promoting the upgrading of Yiwu professional market, and further promoting the development of county e-commerce economy. The development of Yiwu small commodity economy has gone through five stages: marketization, industrialization, urbanization, internationalization and e-commerce. The e-commerce mileage of Yiwu traditional wholesale market has gone through four stages of development: B2B e-commerce opens up a new channel for international trade, Taobao villages open up a new channel for online retail, traditional merchants and commercial cities collectively embrace e-commerce, and a new ecology of multi-channel e-commerce co-existence. The main characteristics of Yiwu pattern is the rapid rise of online merchants and electricity, leading e-commerce trade volume in the country, rising e-commerce service industry, diversified e-commerce ecology, and e-commerce speeded up by traditional wholesale market.

Haining Pattern

Haining is a well-known fur city in China, and has been following the pace of the internet to promote the development of e-commerce. By the end of 2012, Haining's network merchants (B2C/C2C) had been more than 10,000, with more than 40,000 new job positions created, and the annual online sales exceeded 10 billion yuan. The characteristics of the Haining pattern are similar to those of Yiwu, as the e-commerce is also driven by electricity providers for transformation and upgrading. Specifically speaking, one is to introduce talents; the other is to create the platform and develop e-commerce in both domestic and cross-border way; the third is to strengthen supervision and brand protection; the fourth is to build industrial parks and strengthen services; the fifth is to upgrade management and upgrade enterprises.

Qinghe Pattern

Qinghe is the largest online sales base of cashmere products in China. It has more than 80% cashmere processing capacity in China and 50% in the world. It has the title of "Capital of Cashmere in China". Qinghe has a very strong industrial foundation. Relying on this professional and traditional market, Qinghe's e-commerce has been developed rapidly. The main development idea of Qinghe pattern is developing online and offline commerce at the same time, so that the tangible market and the invisible market can complement each other. Key features include: 1, similar to Yiwu E-commerce, the e-commerce development is supported by strong traditional industries or professional markets. Therefore, its electricity supplier supply chain has high efficiency, low commodity prices and strong industry competitiveness; 2, after seeing the leader's demonstration, the traditional merchants and enterprises with deep industrial accumulation have rapidly transformed e-commerce, and the online merchants group and the scale of transactions have rapidly expanded; 3, the electricity supplier ecology created by the government has played a strong role in promoting the development of local e-commerce.

ChengXian Pattern

Chengxian is a county with beautiful mountains and rivers. The industrial economy is poor here, but there are many mountains and rich agricultural and forestry products. There are about 500 thousand acres of walnut forest. Since 2013, Li Xiang, secretary of Party committee in Chengxian, has taken the lead to popularize walnuts through Weibo and WeChat. The key features of Chengxian pattern include: 1, explosive product line. Walnuts are used to promote the popularity first, and then garlic, honey, pork, hand-made noodles and other agricultural products became popular; 2, government marketing. The secretary of the county Party committee took the lead. Four groups and village cadres joined forces to carry out marketing by means of Weibo and WeChat.

Suichang Pattern

Suichang is a typical mountainous county. Its industrial economy is not quite advanced, but agricultural and forestry products are abundant. The so-called "Suichang pattern" (Ali, 2013b) is a sustainable mechanism of agricultural e-commerce centered on the association of online stores, under the guidance and support of the local government, cooperating with service providers and online merchants. Its core subjects are the association of online stores, online merchants, service providers and governments. The core business of the association consists of three parts: integration of saleable sources, organization of network distributors (mainly local merchants), unified warehousing and delivery services.

Before 2014, the Suichang pattern was in the first generation stage, and it was called the "Suichang 1.0 mode". With the development of e-commerce towards the direction of O2O and mobility, Suichang mode has been upgraded into 2.0 mode (Yu and Zhao, 2016), and has been improved in two aspects: first, the establishment of "street-driving company" and the establishment of rural information service stations, which formed the rudiment of agricultural product supply mechanism for small farmers and improved agriculture; second, the marketing channels are multi-platform, cross-platform and mobile, thus realizing the diversity of marketing channels.

Suichang, as the only "strong counties in rural e-commerce" identified by the Chinese Ministry of Commerce, is the first county in China. Suichang pattern enlightens the direction of solving the front-end predicament of fresh e-commerce supply chain. It is to build a county-level integrated service system of agricultural e-commerce, with county-level integrated service providers of agricultural e-commerce, town-level hub and village-level. The service station is the core body. According to the scale of agricultural production, the dual-track agricultural product supply mechanism and traceability system of agricultural product quality and safety are established, and modern agricultural production methods such as order agriculture are promoted.

Tongyu Pattern

Tongyu is a typical northeastern agricultural county and a state-level poverty-stricken county. It is the famous "land of miscellaneous grains and miscellaneous beans" in China. The output of mung beans, sunflower and other agricultural products ranks first in China. However, it is located in a remote area with inconvenient transportation and weak foundation of e-commerce. Agricultural products are sold through traditional ways (wholesale and retail channels). Key features of Tongyu pattern include: 1, online direct selling is the main channel, and a small number of foreign network distributors are subsidiary; 2, a unified brand "three thousand Wo" is registered to unify the packaging, sale and service of all agricultural products; 3, the county government has drawn up the "Tongyu County Electronic Commerce Development Center" from various departments to fully cooperate with the work of the e-commerce company.

Tonglu Pattern

Tonglu is the most powerful county in the west of Zhejiang Province. It is only 80 kilometers away from Hangzhou City and it is also a well-known logistics and pen-making town in China. The unique location advantages provide a good support for Tonglu's e-commerce development, especially in terms of logistics. In less than three years, e-commerce has developed from scratch and merged into various industries of Tonglu. The e-commerce development in Tonglu has been approved by the industry and won many honors. The process of Tonglu's e-commerce development is: grassroots innovation goes first, followed by the masses, and promptly promoted by the government after e-commerce forms a certain scale. This is what experts call a "smooth sailing" model. The model has four main characteristics: 1, government-led. The government takes the initiative to think ahead of enterprises, take a series of measures to promote the development of e-commerce, such as changing ideas, promulgating policies, creating an atmosphere, looking for resources, and building platforms; 2, ecological concept. Tonglu firmly grasps the logistics and talent bottlenecks that restrict the development of rural e-commerce, and consider the top-level design issues, focusing on building an ecological system of rural e-commerce, and to achieve open innovation; 3, two projects taken simultaneously, one is the Alibaba Rural Taobao Pilot Project, which is used to open up the logistics channels. Another is to take Tonglu Agricultural Products E-commerce Industrial Park as the center, enhance the resources of rural products and expand the online market.

Wugong Pattern

Wugong is located in the western part of Guanzhong Plain of China. It is an important channel for the east of Xinjiang, Qinghai and Gansu provinces. Wugong County is about 70 kilometers east of the capital city of Xi'an and 50 kilometers away from Xianyang International Airport. It is an important transportation hub and material distribution center in Guanzhong area with its flat and open terrain and superior geographical location. When developing e-commerce in Wugong County, the idea of "basing on Wugong, linking Shaanxi, radiating northwest, facing the Silk Road Economic Belt" was put forward. A new way of county e-commerce development of "buying northwest and selling the whole country" was gradually developed. The business mode of Wugong can be summed up as: distribution center plus e-commerce. Key features of Wugong pattern include: 1, the planning of "distributing center" has brought into full play the advantages of convenient transportation, and the development of warehousing and logistics industry; 2, relying on the complete and perfect electricity supplier park, vigorously attract foreign business operators to register locally; 3, integrating the resources of Northwest China, breaking through the constraints of local products (Wei, 2014).

Beishan Pattern

Beishan has been developing rural e-commerce since 2006, and its rural e-commerce sales have increased geometrically. Beishan has been transformed from a traditional barbecue village and wonton village to a Taobao village. The e-commerce business has nothing to do with the local traditional industries: new industries have been developed on traditional farming land, such as outdoor goods, tents, sleeping bags and backpacks. In 2006, Lu Zhenhong, a native entrepreneur, set up the first online store, attracting more young people to turn to online entrepreneurship. Driven by leading enterprises, the relevant government departments have made every effort to promote the formation of a "leading government to promote youth interaction" Beishan pattern. Beishan

pattern differs from the "Shaji pattern" (as introduced below) in that: 1, the product category is different, mainly used outdoor goods; 2, the brand is single. 95% of the electricity providers in Beishan village do outdoor products, of which 90% are "Beishan wolf" brand distributors.

Shaji Pattern

Shaji is a typical rural area in northern Jiangsu Province of China. Every year, rice and maize are grown in saline-alkali land with less than 1 mu per person, and the income is very low. Young adults mostly rely on migrant workers to increase their income. The whole town has once developed pig farming here, but it failed in the financial crisis in Southeast Asia in 1998. Later, the whole town developed waste plastic recycling industry, but it was destroyed by the global financial crisis in 2008 and increasingly stringent environmental protection policies. Beginning in 2006, the "three swordsman" headed by sun Han began to make simple furniture business. By the end of 2014, more than 2,000 people were directly engaged in online merchants in Dongfeng Village, Shaji Town alone, opening more than 1,000 online stores, and achieving a transaction scale of more than 2.4 billion yuan. The key features of Shaji pattern include: 1, they choose categories that are totally unrelated to local traditional industries; 2, the category of simple furniture they choose has the characteristics of low technology threshold, low capital demand and low difficulty in industrial resource integration; 3, towards the mode of industrial division of labor: plate suppliers, processing plants, online stores, logistics express delivery, packaging and so on.

RELATED WORK

In (Xin, 2015), the author analysed the characteristics of the five counties which he has participated in and served, including Chengxian County of Gansu Province, Tongyu County of Jilin Province, Mengyin County of Shandong Province, Dawa County of Liaoning Province and Yanji City of Jilin Province. The author believed that the most important thing of e-commerce mode is to provide better entrepreneurship environment for agricultural operators and farmers, sell high-quality agricultural products of origin and with a good price, enrich the people and develop the economy. This paper has well grasped the core power and demand of county e-commerce, but the research has limitations on the research scope, and the case analysis is comparatively rough.

In (Ren, 2015), eight e-commerce patterns in Chinese counties were enumerated, including Suichang pattern, Tongyu pattern, Tongtong world agricultural and commercial industry alliance pattern, Shaji pattern, Qinghe pattern, Wugong pattern, Chengxian pattern and street-rushing pattern. The authors compared these patterns from four aspects: the electricity supplier pattern, the key characteristics, the imitation point and the applicable area. The analysis of this paper is still not detailed enough. Therefore, it is difficult for different regions to make reference and innovative application according to their own specific characteristics.

In (Luo *et al.*, 2016), the author considered that county e-commerce is a complex system engineering, involving diverse aspects such as county brand building, large-scale standard production, e-commerce network channel building, logistics storage infrastructure and increasing income for farmers. It is believed that only by building a sustainable County e-commerce eco-economy can the transformation and upgrading of the county economy be really promoted. This paper proposes three models of e-commerce development in counties, namely "one county one product eco-economic model", "eco-economic model of distribution center" and "eco-economic model of industrial chain". "One County, One Product, Eco-economic Model" such as the Chengxian pattern, is a multi-dimensional and systematic way to create local regional brands online and offline by taking a specific category of county characteristic products or brands as the starting point and county enterprises, governments, social organizations and regional leaders as propaganda carriers. E-commerce has been promoted to the whole country and even the whole world, so as to promote the development of local economy. "Eco-economic model of distribution center" is to develop logistics industry by taking advantage of location and convenient transportation. Through the high cost-effectiveness of logistics delivery, a large number of powerful enterprises will be attracted to gather here to develop e-commerce industry, thus forming "distribution center model" and promoting the rapid development of local e-commerce and regional economy. Tonglu pattern is such an example. "Industrial Eco-economic Model" is based on a category of products as a starting point. All the counties (districts) concerned with the products participate in the formulation of product classification standards, the establishment of traceability system (agricultural products) and service standards (services), and the production is carried out according to a unified standard. Product processing, unified brand publicity, through the product pre-production, production, post-production industrial chain (production/planting, processing, quality inspection, traceability, warehousing, logistics, sales, after-sales, etc.). The key point of the model is to embrace development, establish brand, open up the industrial chain, and promote the development of supporting industries. Examples include Qinghe pattern and Yangling pattern. In this paper, several modes have been abstracted, which have some similarities with present paper, but the scope of the patterns is limited. In addition, the detailed comparison of different patterns is insufficient.

THE FOUR STRENGTHS AND THE SASS FRAMEWORK

By searching with keywords of ‘e-commerce’, ‘counties’, and ’patterns’ from scientific papers as well as news and reports in Internet, we have collected ten well-known cases of ‘e-commerce pattern in Counties’. They are: Yiwu pattern, Haining pattern, Qinghe pattern, Chengxian pattern, Suichang pattern, Tongyu pattern, Tonglu pattern, Wugong pattern, Beishan pattern, and Shaji pattern. In each case, e-commerce has been developed successfully in some ways in one Chinese county. To identify primary strengths of these counties, we took an iterative approach. *First*, we read descriptions of the cases, and found out key words

associated with strengths, merits or advantages. *Second*, we summarized, classified and refined these words. *Third*, we checked whether these refined words applied to other cases. If not, we modify and check again. After several rounds, we finished with four strengths which we thought exist in all cases. During the process, we noticed that in addition to strengths, a similar route of e-commerce development also exists in the cases. In such a route, four important elements are included: Strength, Aim, Subjects, and Solutions. The general route to develop e-commerce in these cases is: some *subjects* set out an *aim* to develop e-commerce according to the primary *strength* of the county, then they put in place proper *solutions* to achieve the aim. Thus we proposed the SASS framework to characterize key elements of the general route to develop e-commerce in a county. Similar to the four strengths, an iterative approach has been taken to refine and hammer the SASS framework elements.

Four strengths have been identified in e-commerce patterns in Chinese counties:

- **Industry Strength (IS)**: means that in one county, some traditional industries have been well developed and tested by the (offline) market;
- **Resource Strength (RS)**: means some properties or environment resources are rich and of high quality in a county, although corresponding industry may not be developed;
- **Position Strength (PS)**: means convenient traffic which means cheap logistics and rich human resources (which are essential for e-commerce development) exists in a county; and
- **Marketing Strength (MS)** means that in a county, an innovative, specific, or emerging marketing positioning has been used.

And the SASS framework is proposed to recognize four key elements of a general e-commerce development route:

- **Strength**: Primary advantages of one county, based on which, e-commerce can be developed;
- **Aim:** The key goal of developing e-commerce;
- **Subjects**: Persons or organizations who drive the e-commerce development, managers of local governments and solution providers for instances;
- **Solutions**: Tasks that should be performed in order to achieve the aim.

REVIEW RESULT

Strength in the Cases

We tried to identify which strengths have been used in each case. The results were listed in Table 1. From the table, we can see that Yiwu, HaiNing, Qinghe have used Industry Strength when developing e-commerce. For Yiwu, before the e-commerce was developed in 2015, the county has been well-known as "the world's largest small commodity wholesale market" in a global scope. Based on the powerful traditional industry, Yiwu has achieved huge online success comparatively smoothly. In 2016, Yiwu was regarded as No.1 in "Top 100 counties for e-commerce development" which was published by Ali Research (Ali, 2017). Similarly, Haining has been famous for fur industry traditionally. After applying e-commerce, Haining achieved success as well. While in Qinghe, it has been the biggest collecting and distributing center for cashmere sales before e-commerce was applied. For e-commerce development in Qinghe, it started when a local farmer tried selling cashmere online and achieved success. This has led many local farmers follow and achieve success in the whole village and the whole county afterwards. During the process, the government has played an important role by providing training and business opportunities.

Table 1: Strengths for "E-Commerce Patterns in Counties".

	IS	RS	PS	MS
Typical Patterns	Yiwu(Small commodity), HaiNing(Fur), Qinghe(Cashmere)	Chengxian(Walnut), Suichang(Agricultural products), Tongyu(Agricultural products), Tonglu(Multiple goods)	Wugong(Multiple goods), HaiNing(Fresh Flowers), Tonglu(Multiple goods)	Beishan (Outdoors equipments), Shaji (Furniture)

Chengxian, Suichang, and Tongyu fall into the RS category. This is because although no mature industry or brand is available, rich local resource has been explored and used when developing e-commerce. For Chengxian, it has been very poor and the traffic there is quite inconvenient. Later, one head of the local government advocated local walnuts through his personal social media. This marketing method was quite fashionable at that time. And it brought the outbreak of e-commerce markets then. Later the good sales of walnuts led to the sale of other items. In Suichang, there are rich agricultural produce. But no unified production, packaging, and marketing was available. From 2010, a team was built up and agricultural products were sold with unified brands. *"The strategy was to promote Sui Chang as the first unique agricultural product center online. This helped us establish our identity and support further development (Yenni, Pan, and Cui, 2017).*" After that, e-commerce was developed gradually. Similarly in Tongyu, thanks for the local fertile soil, many kinds of agricultural products of good quality are available. Tongyu has been well known as "Hometown of sunflowers", "Hometown of Mung Bean", and etc.. But there is no competitive brand in Tongyu due to

low level of commercialization. In 2013, a team was built up to build unified brands and package best-selling products. Then e-commerce was developed continuously. Another case in RS is Tonglu. Different with the other three cases in this category, Tonglu is well known not only for agricultural products, but also for wonderful natural environments. Tonglu has been called as "The Most Beautiful County in China". E-commerce in Tonglu has been applied deeply and successfully in many industries including tourism.

Wugong might be the most typical example in PS category. Wugong is located in a broad and open area with extremely convenient traffic conditions. It has been a very important traffic center and collecting &distributing center in central China. As for the e-commerce in Wugong, the main business model is selling materials from southwest China to other places in China. As said in (Cui, Pan, Newell, & Cui, 2017), "*Given the importance of e-commerce in social innovations in rural villages with limited resources, orchestrating resources has a critical role.*" In Wugong, resources in not only Wugong, but also other counties in southwest China, have been utilized. Haining is also listed in this category. This is because apart from the dominating industry (Fur), the e-commerce has also been developed for a new industry (fresh flower industry) in HaiNing. For this new industry, PS is primarily used. Another example in this category is Tonglu. In Tonglu, there is no industry that is highly developed. And there is no specific property resource that is very rich and of good quality. However, there are many light industries that are medium-developed. Tonglu is also well-known as "The Hometown of Private Express Delivery". With cheap logistics services and abundant human resources due to the Position Strength, the overall e-commerce has been developed in a satisfying way.

There are two cases in MS category: Beishan and Shaji. These two counties are somewhat similar: they are poor and remote, and there is no advanced industry or rich resource that can be developed or explored there. Under these circumstances, local people has had to find a brand new market, and develop the industry gradually based on limited conditions. In Beishan, one grassroot peasant tried to sell outdoors clothe and achieved some success. Then many local people followed quickly. The industry was developed and became competitive accordingly. While in Shaji, one local people chose to focus on another specific market: assembled furniture. When many local people followed up with the successful commercial models, a new industry gradually grew up. In these two cases, "*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* (Leong, Pan, Newell, and Cui, 2016)."

SASS Elements for Different Strength

Based on the SASS framework, the route to develop e-commerce in counties can be recognized in a clear way as shown in Table 2. For *counties with IS*, the aim of applying e-commerce is often to expand the market from offline to online. A typical case is Yiwu. While in *counties with RS*, some barriers exist such as lack of information broadcasting, so the local industry was not developed. However, because of the rich material or environmental resources, big potential exists for corresponding industries to be developed successfully. Thus in such areas, the aim of applying e-commerce is often to make an online "Hot Cake" first, and open the market for other goods afterwards. Because of the need for professional knowledge and skills, e-commerce operators usually undertook the tasks. Chengxian pattern is such a case. For *counties with PS*, two general e-commerce barriers (expensive logistics and lack of human resources) have been alleviated to a large extent. Therefore, it is much smoother to develop e-commerce in such areas than other remote areas. Generally, the aim is to encourage various businesses to develop e-commerce freely by establishing proper atmosphere and providing supporting services. A typical case is Tonglu. While in *counties with MS*, there is almost no advantages at the first glance. Some peasant or private enterprise need to find a differentiated market and achieve online success first. When more local people follow up, gather, divide the labor and cooperate, a new industry might be developed gradually. Shaji pattern (Dong *et al.*, 2016) is a typical case.

DISCUSSION

We have analysed e-commerce patterns in counties and identified four strengths in the previous section. For other counties with limited resources that are underdeveloped, the four strengths and the SASS framework could also be used for a reference model to develop e-commerce projects. First, the primary strength should be identified, such as an existed industry that is developed offline, some specific resources, good ecological environment, or convenient traffic conditions. Or, if no such strength exists, some innovative markets might need to be identified, taking into account other conditions in the county. Second, a clear aim should be set based on the specific strength. And third, a series of solutions need to be designed and performed in order to fulfil the aim. Last, during all the process, actions should be done by proper subjects.

During the process of our analysis, we realized that a pattern was named after the county name. However, the pattern is actually relative to one specific industry instead of all industries in the county. This specific industry was usually dominating in the county at that time. Therefore, one strength is relative to one specific industry as well. Take Haining for instance, when e-commerce was applied to the fur industry, IS has been primarily considered. But when e-commerce was applied to the fresh flower industry, PS was primarily considered. When several industries are similarly developed in one county, we need to identify one primary strength for each industry.

Table 2: A Sample of SASS Elements for Different Strengths

Strength	Aim	Subject	Solution	Typical Pattern
IS	Expanding online market based on offline industry	Companies	Expanding online channels	Yiwu
RS	Achieving online success firstly	E-commerce Operators	Making “hotcakes”	Chengxian
PS	Open development	Government	Creating atmosphere and providing services	Tonglu
MS	Achieving online success firstly	Private Enterprises	Differentiated market	Shaji

For these typical cases, one primary strength have been identified for one county/industry. However, we should be aware that for many other counties, we might not be able to find one dominating strength. Instead, two or more strengths might be almost strong. In that case, it might be helpful to consider the combination of several strengths to give the most value. What is more, it is important not only to consider which strengths exist, but also to consider how big each strength is.

CONCLUSION AND LIMITATIONS

In this article, we have analyzed successful cases of e-commerce in Chinese counties. Four industry strengths have been identified. In addition, we proposed the SASS framework to characterize important elements to develop e-commerce in a county. We have reviewed ten well-known e-commerce patterns to evaluate our proposal, and the results showed that these strengths can be easily found in the patterns. Based on the strength, the corresponding aim, subjects, and solutions can be identified in the cases as well. The SASS framework helped us analyze and understand such cases in a more efficient way. There are some limitations of this research. First, we have only evaluated the four strengths and the SASS framework with ten typical e-commerce cases. The generaliability of the framework to other cases needs to be explored. Second, we performed the evaluation only in our team. Therefore, some future work has been planned. We will analyze more general and complicated cases of e-commerce development in other counties. In addition, we will invite experts or practitioners for user evaluation. We will evaluate whether the SASS framework could cover all the key elements when performing top-level design of e-commerce for one county. We will also evaluate whether enumerated strengths and SASS elements are exhausted and organized in a well-structured way.

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