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## Understanding the Transformation from E-commerce to S-commerce:

### Evidence, Path and Inspiration from China

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**Abstract:** With the rapid application of Web2.0 and the rise of social media, social-commerce has become a research hotspot in the field of marketing and information systems. This new business form which is driven by the user's social interaction, is considered as a new paradigm in current e-commerce research field. However, current studies are mainly limited in the field of marketing, the law of s-commerce's evolution and its impact on the traditional e-commerce is not been fully considered. In recent years, China's s-commerce has developed rapidly and has not received enough research attention. This study selects Taobao.com and PingDuoDuo as typical cases to analyze the "network stream dilemma" of the traditional e-commerce platform and the solution in the s-commerce context. We conclude that traditional e-commerce platforms are evolving toward s-commerce driven by the change of network stream distribution mechanism.

Keywords: social-commerce, Web 2.0, social media, e-commerce, network stream

#### 1. INTRODUCTION

Social-commerce is a new commercial phenomenon based on the rise of Web 2.0 technology and social media. The rise of social media allows customers to be integrated into online community through interaction and complete transactions through social relationships. In general, the rise of s-commerce benefits from three factors: Web 2.0 technology, social media and e-commerce. S-commerce dates back to the 1990s, and the two pioneers of e-commerce—Amazon and eBay—introduced user reviews of products and ratings of business performance. In 2005, Yahoo.com introduced the concept of "social commerce" to describe a new group shopping feature on its platform that consumers write, share and comment about the products. S-commerce is a paradigm transformation in business model that opens up new areas of current IS and e-commerce research.

Despite of the rapid development of s-commerce, related research lags behind. On the one hand, most of the research regarded s-commerce as a new online customer acquisition mode, and explained the characteristics of s-commerce from the perspective of marketing. On the other hand, China's e-commerce has developed rapidly, the trend of traditional e-commerce to s-commerce has emerged, which provides a very good research material for us to understand the internal mechanism of s-commerce. Therefore, This study illustrates the transition from traditional e-commerce to s-commerce from the perspective of business development mechanism. We conduct a multipal-case study of China's e-commerce to fill the current gaps of s-commerce research.

The contributions of this work are as follows. First, we follow the history of the evolution of e-commerce and discuss the problems of traditional e-commerce platforms in China. Then we analyze the path and characteristics of China's s-commerce development. This will enrich current research on s-commerce. Secondly, we point out the issue of "network stream dilemma" of traditional e-commerce platforms. Based on this, we develop the law of the transformation of traditional e-commerce to s-commerce. This increases our understanding of the internal mechanisms of s-commerce development.

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## 2. LITERATURE REVIEW

Undoubtedly, s-commerce is one of the most popular research topics in e-commerce since 2006(Zhang et al.,2014). According to H. Han et al.(2018), there are 155 journal articles and 69 conference papers focus on social-commerce during the year of 2006-2017 with average growth rate of more than 10% each year.<sup>[6]</sup> At the same time, s-commerce quickly became an effective way to engage customers by internet companies such as Amazon, Facebook and eBay<sup>[1]</sup>.

Despite of the rapid growth of s-commerce, researchs about this new phenomena is still in early age(H.Han et al.,2018). We need to clarify some important issues about s-commerce, that is 1) what is social-commerce; 2) what are the research topics about s-commerce; 3)what activities can be seen as s-commerce.

### 2.1 What is social-commerce

The mechanism behind s-commerce is that social media can develop closer relationship with buyers and improve customer loyalty(Hajli,2014). The emergence of s-commerce has also changed the role of customers: customer become the focus of companies because its collective bargaining power given by social media(Kim,2012). From the perspective of information dissemination, s-commerce refers to an online community that uses social media to engage users in selling, purchasing, comparing, and sharing product service information(Zhou et al., 2013). However, from the perspective of ICT, some researchers also defined s-commerce as an evolutionary version of online commerce in Web 2.0, which allows customers to share more specific groups of articles through blogs, thereby creating more interactivity and participation(Sturiale & Scuderi, 2013). This definition considered s-commerce as a subset of e-commerce which involves using social networks to support social interaction for online business (Sharma & Crossler,2014). Overall, Definitions of s-commerce usually have four elements: e-commerce, social media, Web 2.0 and social activities.

S-commerce is a subset of traditional e-commerce which utilize social media to initiate customer interaction in order to promote business activities. The main differences between s-commerce and e-commerce are as follows: First, ICT base. E-commerce is enabled by Web 1.0, where communication between sellers and buyers is one-way to another, while s-commerce is enabled by Web 2.0 that supports social media and allows bidirectional communication, which results in creation and sharing of UGC(Baghdadi,2013). Secondly, business model.E-commerce is a traditional product-oriented business process which enable customer to finish the transaction more effectively while s-commerce is social and customer-oriented which emphasize to built long relationships with customers and benefit from the process(Hajli,2014). Thirdly, value creation. In e-commerce, business value creation is limited in enterprises and their partners, whereas in s-commerce, the right of value creation extended to customers, participatory and collaborative is one of its important characteristics<sup>[1]</sup>.

### 2.2 What are the research topics about s-commerce

First, user behavior. Most of the research in this field is to explain the difference between s-commerce and traditional e-commerce from the perspective of marketing. The initial form of s-commerce is to get customers through social platforms. For example, in 2009, flowers.com opened the first Facebook store is considered as the first formal lunch of s-commerce (Bansal, Green & Chen,2011; Smith, Zhao & Alexander, 2013).Based on social platforms, the online community, UGC, KOLs and net celebrity can also initiate transactions and this trading mode become research objectives in examining the different user behaviors between s-commerce and traditional e-commerce. Moreover, the purchasing intension of customers such as trust, loyalty, WOM and motivation on the decision making process of buying is widely addressed in this topic.

Second, customer engagement. The emergence of s-commerce acknowledges the opportunities afforded by the mobile internet and particularly the interactive aspects of Web 2.0 technologies and social media to

transform the relationship between sellers and customers. Some studies such as Sashi (2012) focus on analyzing characteristics of social network and its impact on s-commerce, users and organizations. These studies attempt to mine transaction data on social networking sites to develop strategies for customer engagement such as how to understand and differentiate customers in order to conduct targeted marketing strategies.

Third, website design. Studies on this topic are mainly focus on design features of s-commerce website and the process of designing such as how to integrate e-commerce elements on social networking sites. Also, some academics developed a set of principles for s-commerce design in order to build more effective s-commerce platforms (Huang & Benyoucef, 2013).

### **2.3 The activities of s-commerce**

Based on Liang and Turban (2011), s-commerce is “the delivery of e-commerce activities and transactions via social media environment, mostly in social networks and by using Web 2.0 software”. Thus, s-commerce activities can be divided into social activities and commercial activities<sup>[1]</sup>. We believe that in s-commerce context, commerce is the central goal while social activity is the way to realize it. Therefore we summarise two main taxonomies of s-commerce activities: social activities and transactional activities.

Social activities refer to those activities which are conducted among users in order to promote transactions such as WOM (Wang & Yu, 2017), UGC (Siering & Muntermann, 2013), Information sharing (Liu et al., 2016). Although they are social activities, the goal of them are promoting transactions. Another kind of activity of s-commerce is transactional activities. These activities are truly commercial among users including advertising (Goncalves & Zhang, 2013), purchasing (Hwang et al., 2014) and group-buy (Yu et al., 2014). These activities refer to all those activities which can lead to commercial benefits on s-commerce platforms.

### **2.4 Literature comments**

There are mainly two shortcomings on current research about s-commerce. On the one hand, Most of the studies focus on the advantages of s-commerce from the perspective of marketing, while lack of theoretical research on the transformation of traditional e-commerce to s-commerce. Although s-commerce increasingly employed in practice, the theoretical research of s-commerce is still “handful and scattered”<sup>[1]</sup>. New theoretical developments in this area can be seen as one of the most challenging aspects of information systems (IS) and e-commerce research (Wang & Zhang, 2012) while we still lack of better understanding about the transformation from e-commerce to s-commerce through empirical evidence. On the other hand, With the development of China's e-commerce, it has become an indispensable market in the global Internet economy. Research on China's e-commerce, especially s-commerce, is becoming more and more important. At present, the academic society lacks the attention to China's s-commerce development.

## **3. CASE DESCRIPTION**

At the beginning of 21st century, China's e-commerce developed rapidly and a number of world-class e-commerce platforms emerged. The essence of e-commerce platform is to promote the efficient matching of transaction stream (Sandra and Roi, 2003). Information technology allows both sellers and buyers to get rid of the restricts of time and space, and complete the matching of transaction information with low cost and high efficiency (Ngai and Wat, 2002). The scale of e-commerce transactions in China has shown an explosive growth (from 6 trillion yuan in 2011 to 67.5 trillion yuan in 2018). In 2014, JD.com and Alibaba successfully listed in the United States and entered the list of the world's 10 largest e-business companies. Alibaba has become the world's largest e-commerce company.

S-commerce has taken an increasing share of online transactions in China since 2014. Since the popularity

of mobile smart devices, the transaction scale of e-commerce on mobile devices has been less than 2% of the total amount in 2011, and in 2017 this number reached more than 70% with annual growth exceeding 50%. In this process, a s-commerce company called “PingDuoDuo” has risen rapidly. “PingDuoDuo” was established in September 2015. Within only two years, its total transaction scale reached 140 billion yuan. In July 2018, “PingDuoDuo” was listed in the US, and it took less than three years to complete the road of traditional e-commerce giants such as Alibaba and JD.com for 10 years.

#### **4. RESEARCH BACKGROUND AND NETWORK STREAM DILAMMA**

At the beginning of 21th century, China's huge consumption stream moved from offline to online, creating huge e-commerce platforms and even a new internet economic miracle.<sup>2</sup> Massive trading parties have gathered huge commercial transaction streams on the e-commerce platform, making companies such as Alibaba and JD.com become e-commerce giants. In the rapid growth of e-commerce in China, these enterprises use information technology to gather huge number of buyers and sellers. The online commercial stream and advertising revenues have create mostly monopoly of e-commerce market.

##### **4.1 Network stream dilamma**

With the continuous increase of users, how to accurately connect online sellers and buyers has become an important issue that restricting the development of China's e-commerce platforms. An intuitive way to solve this problem is to improve the network stream resource allocation mechanism: establishing a relatively "fair" way of network stream distribution to balance the needs of different parties (such as different products categories, senior sellers and startups, corporate sellers and individual sellers, etc.) . In practice, there are two corresponding strategies that are being conducted by these e-commerces platforms. On the one hand, continuously optimize the search engine (keyword) ranking mechanism(including artificial intelligence), that is, using a variety of rules (such as sales, reputation, rate of favorable comments, etc.) to improve search results and allocate more network stream to the “best” sellers. On the other hand, increase advertising investment outside of the e-commerce platform to attract more potential customers. For example, according to Alibaba's 2016 financial report, Alibaba invested 4.5 billion yuan in external advertising in the fourth quarter of 2016. The number of new users was 4 million in the same period, and the unit user cost was as high as 112.5 yuan. And this cost will untimatly become a burden of its users.The above two aspects continually push up the advitising costs of the sellers on e-commerce platforms. This is so called China’s e-commerce “network stream dilamma”.

##### **4.2 Problems of network stream dilamma**

The increasing cost of network stream have already produces series of problems for China’s e-commerce. First, it encourages "user manipulation" phenomenon. This phenomenon is called “shuadan”(false tranctions) which is a serious problem in China's e-commerce. In the need of network stream distribution, sales volume, reputation and positive reviews are the most intuitive indicators for platform to filter sellers. Second, it causes homogenous competition. The expenses of false transactions and false comments will eventually be passed on to buyers. This network stream-oriented competition strategy has made sellers more inclined to use resources to get more network stream at lower cost, rather than improving product quality and taking a “differentiated” competition path. At last, it limits the innovation of e-commerce ecology. The rapid development of China's

<sup>2</sup> The concept of stream comes from physics, which means the amount of fluid streaming through a closed section of an open channel per unit time. Network economics and e-commerce theory borrow this concept to refer to the amount of traffic that a particular network channel can access per unit of time, including Page View (PV) and Unique Visitor (UV). In this study, we use network stream to refer to the amount of online users(or visitors) access a particular website (e-commerce platform, social media etc.).

e-commerce in early days has undoubtedly benefited from the enthusiasm of tens of thousands of SMEs to start business at lower cost on the e-commerce platform while the increasing network stream cost has kept these innovative startups out of the e-commerce platform.

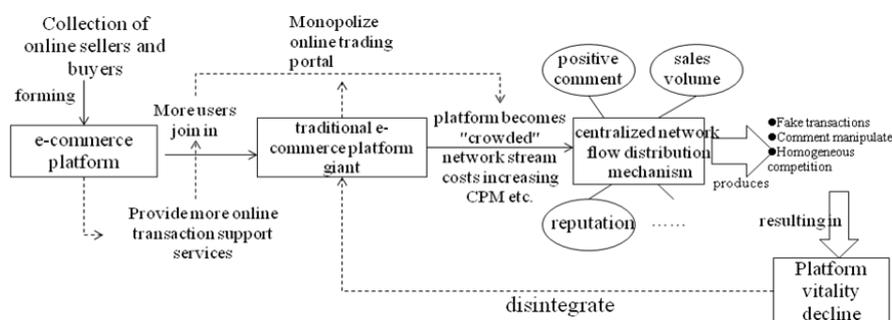


Fig.1. The network stream distribution dilemma of traditional e-commerce platform

#### 4.3 The essence of network stream dilemma

In fact, the essence of network stream dilemma is platform-centered, centralized network stream distribution mechanism. Traditional e-commerce platforms adsorb transaction network stream to build e-commerce infrastructure by the profit generated by network stream distribution. To change the centralized distribution of network stream, we need to disrupt the way that the traditional e-commerce platform operates. Without major external technology, traditional e-commerce platforms are difficult to change the status of centralized network distribution in the short time. Network stream dilemma has no solution in the traditional e-commerce platform. The essence and mechanism of network stream dilemma is described in Fig.1.

## 5. CASE ANALYSIS

### 5.1 Socialization: a different mechanism of network stream distribution

Network stream dilemma of traditional e-commerce platform is ultimately attributed to the essence of its existence: centralized network stream distribution mechanism. With the application of mobile smart devices and social media, the foundation of this model has gradually been shaken: decentralized transaction portals and channels have gradually become popular. In recent years, with the rapid spread of mobile smart devices, Chinese netizens have rapidly migrated from PC side to mobile side, which provides an important technical foundation and user support for the rise of s-commerce. Compared with PC, the mobile terminal has greater convenience and immediacy, which allows both sellers and buyers to break through the time and space restrictions and achieve "24 hours online". Meanwhile, the mobile device has a stricter user identity authentication mechanism than PC, so that in the mobile-based business activity, the buyer truly become identifiable and reachable.

In addition, the core of s-commerce which combine mobile e-commerce and social media, is socialization. And the advantages of it are mainly reflected in the following three aspects.

First, s-commerce which based on online community is closer to users. Community-based e-commerce places more emphasis on the loyalty of specific community members. Continuous interaction with users is important for the deep mining of community values. Users are no longer simply product or service taker, but active value creators and sources of innovative knowledge (Christiansen et al.,2010;Nambisan & Baron,2007). Second, s-commerce means trust. In s-commerce activities, transactions are not the end of business, but the beginning of social relationships(Jiang,2016). The core of s-commerce management is the relationship with community members, focusing on strengthening the relationship between users. in s-commerce, both sellers and

buyers have higher trust and higher efficiency of network stream matching. At Last, s-commerce breaks the "centralized" network stream distribution mechanism. In s-commerce, both buyers and sellers no longer need an e-commerce platform to connect each other. The two parties can easily discover potential trading partners through the social media platform. Moreover, in s-commerce, transaction network stream is no longer controlled by the e-commerce platform, and network stream distribution is completely "fragmented" following the social relationships. In this sense, s-commerce not only breaks the "centralized" network stream distribution mechanism, but also breaks down the foundation of the traditional e-commerce platform.

Essentially, s-commerce will make supply and demand matching more precise and cost-effective. On s-commerce platform, user demand become the driving force of business operations. Social network sites allow users to aggregate in the form of community and wait for sellers to discover, match, and transform at low costs. At the same time, crowd-funding, crowd-creating, crowd-sourcing and other user-participating product development models will involve more and more users in the operation of enterprises, making user demand drive business operations become reality. (Yadav et al., 2013) More importantly, users spontaneously aggregate on social platforms such as WeChat and Facebook to generate communities of different interests, objectively "helping" companies to complete traditional market segmentation tasks. The only difference is that the demand is based on the community itself, not the e-commerce platform. The core value of these social-based network stream matching mechanisms is to allow the two parties to connect more accurately at a lower cost. In practice, we observe that s-commerce is forming a closed loop of transactions as shown in Figure 2.

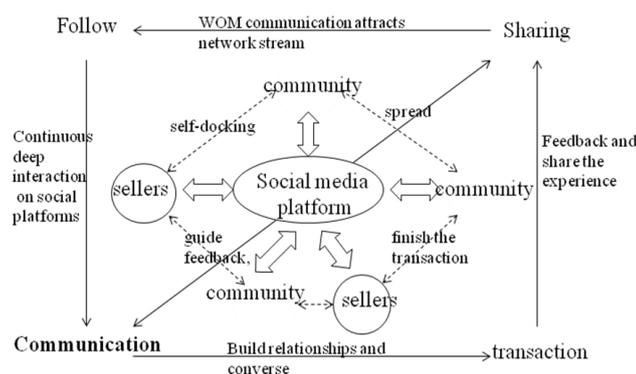
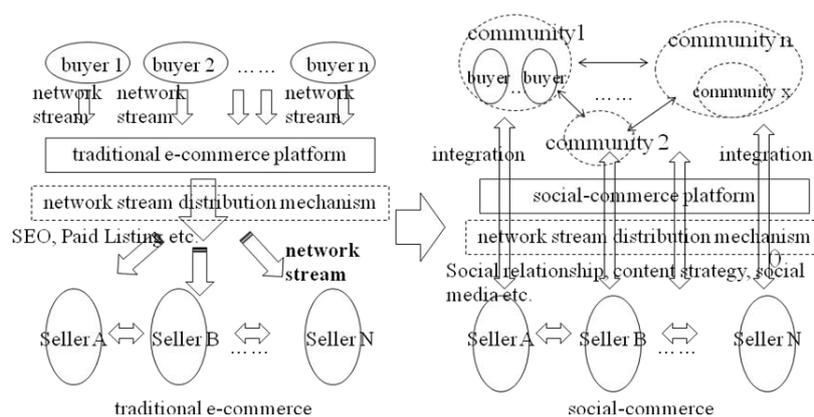


Fig.2. S-commerce transaction closed loop

## 5.2 Taobao V.S. Ping DuoDuo: the comparison between two mechanisms

According to previous discussion, the essential difference between traditional e-commerce and s-commerce in China is the distribution mechanism of online network stream resources. This section will take Taobao and PingDuoDuo as examples to systematically discuss this difference and its characteristics.

Compared with traditional e-commerce platform, the stream distribution mechanism of s-commerce is fundamentally different: There is no centralized stream portal and rules in a s-commerce platform and the network stream distribution rely solely on the users' social needs. S-commerce platforms only provide business infrastructure services such as payment and credit, and do not occupy, dominate or participate in the distribution of transaction network stream. As the example of PingDuoDuo, network stream is in the hands of dispersed online community participants, especially "KOLs": web celebrity, enthusiast, geek, etc. This particular power is controlled by centralized platform when traditional e-commerce companies dominate the online trade market. The difference between the two network stream distribution mechanisms is shown in Figure 3.



**Fig. 3. Network stream distribution mechanism between traditional e-commerce and s-commerce**

The difference in network stream distribution mechanism has produced a series of different performances in practice, mainly reflected in the following four aspects as described in table 2.

**Tab.1. Differences between traditional e-commerce and s-commerce**

	traditional e-commerce	social-commerce
<b>Network stream distribution</b>	<b>centralize</b>	<b>decentralize</b>
<b>Network stream obtain</b>	search engine/quantity	community/quality
<b>Operational goal</b>	transaction	relationship
<b>Marketing channels</b>	companies	users
<b>Competition mode</b>	homogenization	differentiation
<b>Cases</b>	taobao,JD	Ping DuoDuo

First, network stream obtain. Traditional e-commerce platforms mainly rely on search engines and through search engine optimize(SEO) to get more network stream. S-commerce mainly relies on social relationship to get network stream. This kind of method emphasize introducing higher-precision network stream(rather than the amount of the stream). Both two methods are trying to realize higher gross market value (GMV).<sup>3</sup> Traditional e-commerce platforms usually improve GMV by increasing the amount of network stream while s-commerce are generally by getting higher CVR. Obviously, traditional e-commerce pays attention to the quantity of network stream, and s-commerce pays more attention to the quality of it (accuracy).

Second, operational goal. E-commerce platform attaches importance to the construction of service systems to support business transaction and make it more effective. S-commerce is essentially a social platform which is aimed to build more efficient connections between users and make them more convenient to communicate. Therefore, building a long-term relationship among users is the core of s-commerce. In this process, emotional relationships and value identification are far more important than realizing a single business transaction.

Lastly, Marketing channels. The marketing channel of traditional e-commerce is company, while in s-commerce, the main marketing channel is user. In the condition of traditional business activities (including e-commerce), competition around customer stream in channel locations (both online and offline) is the top priority, and it is only profitable to operate at a location where customer is crowded (offline) and where network stream is large (online). While in s-commerce, users or UGC such as interest group, web celebrity, short video

<sup>3</sup> Generally speaking, the business scale for a particular e-commerce platform followed this:  $GMV=CR \times CVR \times PCT$ , For CR is Clicks Ratio which determined by the amount of network stream, CVR is Click Value Rate which determined by the precision of network stream, PCT is Per Customer Transaction which is given by the product that a customer want to buy.

are the lifeline of enterprises. The marketing channel is generated by user's e-WOM. It can be seen that traditional business realizes the connection between user and product, and its carrier is commercial circulation enterprises; while s-commerce realizes the connection between users and its carrier is online community.

Take PingDuoDuo as an example, the different network stream distribution mechanism is the core of its rise. The emerging s-commerce platform represented by PingDuoDuo is using this socialized and decentralized network stream distribution mechanism to empower its users. This is the fundamental destructive innovation that will disrupt the very basis of traditional e-commerce. PingDuoDuo is using multiple social ways to attract user to create, share and spread the information about the products which will be the guidelines for other transactions. S-commerce uses social relationship as the transaction medium to replace the search engine on traditional e-commerce platform, this decentralized network stream distribution mechanism improves the efficiency of supply and demand connection.

## CONCLUSIONS

In China, traditional e-commerce platforms are evolving toward s-commerce. Traditional e-commerce solved the problem of traditional business informationization, including the transform process of traditional business participants from offline to online, as well as the construction of online business infrastructure. These are the foundations for mobile e-commerce applications in China. S-commerce solves the "network stream dilemma" through social networks. In reality, some traditional e-commerce platforms are transforming towards s-commerce such as Taobao headlines and Alipay. These traditional e-commerce companies are building social network systems to ameliorate existing network stream distribution mechanisms by self-media, KOL, live broadcasts, etc. These all indicate that socialization is the development trend of traditional e-commerce.

Besides, technology is not a fundamental feature in the transformation process. Technologies such as mobile Internet and social media are tools to make business, not the essential feature of s-commerce: Operating on PC side may be s-commerce, and operating on mobile devices can also be traditional e-commerce. Technology is only a tool in the transformation process of traditional e-commerce to s-commerce.

Moreover, s-commerce will promote the implementation of the C2B model. One of the most important thing for companies engaged in business activities on mobile devices is community operation. The core of community operation is to achieve in-depth interaction and establish emotional relationships, value recognition with users. In this process, users' deep involvement in product development, design and improvement are the prototype of demand-driven production and operation model (C2B). The distinction between producers, communicators and consumers in the traditional economy has become blurred in s-commerce. The roles overlapped and community participants are often "active producers", "faithful consumers" and "enthusiastic communicators". It can be seen that in s-commerce context, consumers and their communities are the promoters of business activities. C2B model is easier to implement under the influence of mobile Internet technology.

Like any kind of new business format, the development of s-commerce still needs to go through a long period of time. In terms of current trend, socialization will become the mainstream of online transactions. The change in network stream distribution mechanism in s-commerce presents a different organizational structure from traditional e-commerce platform and this provides a new perspective for future organization management.

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