



# Co-evolution between e-tailing and parcel express industry and its geographical imprints: The case of China

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## ARTICLE INFO

### Article history:

Received 19 July 2014

Revised 5 May 2015

Accepted 5 May 2015

Available online 15 May 2015

### Keywords:

E-tailing

China

Parcel express industry

Logistics geography

Co-evolution

## ABSTRACT

This study conceptualizes the relationship between e-tailing (e-retailing) and the parcel express industry (PEI) and analyzes their co-evolution in China. Four operational models of e-tailing are discussed in the context of their intertwining relations with different forms of parcel express services. This co-evolution generated compound outcomes because of the late start of PEI and the fast growth of online shopping in China. These four models coexist, with two standing out as major types that suggest future directions. Two major geographical imprints of this process are explained and conceptualized: (1) the zonal delivery strategy by supply-chain-based e-merchants, which is conceptualized into a choice model of order-fulfilling locations to strengthen timely delivery; and (2) the Baoyou strategy advocated by e-market-based retailers and their logistic support for a slower, low-cost market of larger geographical coverage compared to the first strategy. Both strategies demonstrate that co-evolution is not only a path-dependent process but is also associated with place-dependent institutions.

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## 1. Introduction

E-retailing underwent rapid development worldwide in the last two decades. The introduction of online shopping as an alternative to conventional shopping has caused the fragmentation of purchasing activities by minimizing space and time constraints, as well as by reconfiguring them in a more flexible way for shoppers (Couclelis, 2004). The popularity of e-retailing or e-tailing (we shall use this term from hereafter) has reshaped the shopping behavior of consumers. On one hand, the large amount of products and product information facilitates price comparison and provides inventories that may be unavailable to buyers at local shops (Mokhtarian, 2004). On the other hand, the application of electronic transactions does not require any physical travel to stores, making online shopping a potential substitute for traditional shopping media, especially for certain products such as digital assets (Cao and Mokhtarian, 2005; Cao, 2009). Furthermore, e-shopping has brought spatial changes in the form of more goods being delivered to consumers instead of consumers making the trip to actual stores. Two major issues have captured geographers' attention because of these changes, namely, last-mile delivery (Jiang and Prater, 2002; Anderson et al., 2003; Boyer et al., 2009; Murphy,

2009; Gevaers et al., 2011) and relocation of logistics distribution centers (DCs) (Hesse and Rodrigue, 2004; O'Connor, 2010; Hesse, 2008, 2013; Hall and Hesse, 2012). Although these changes did not necessarily result from e-commerce, e-tailing has triggered several structural changes in the logistics network, as demonstrated by the growing need for large DCs and warehousing facilities that are sensitive to space and time (Hesse, 2002, 2004).

The geographical effects of e-tailing are not limited to these two issues. As technologies and societies progress, albeit at different paces, some countries can experience an advanced e-commerce made possible by different causes, such as their supporting sectors for money transaction, physical distribution of goods, and IT industry. E-commerce adoption is also associated with several social spatial dimensions, including population density, mode of transport, and cultural attributes (Aoyama, 2003), all of which lead to the variety of e-commerce in different countries. Wang (2010) observed that the lack of a parcel express industry (PEI) and a widely used credit card system are the two key reasons online shoppers in China prefer cash-on-delivery (COD) as mode of payment. The current paper discusses how these two factors shaped the development trajectory of co-evolution between e-commerce and logistics.

The intertwining growth of e-tailing and PEI in China is different from that in other countries, and has been overlooked in current academic literature. The PEI has been well established prior to the e-commerce era in many developed economies, such the

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United States, Japan, and some European countries. The first door-to-door small parcel delivery service in Japan, TA-Q-BIN, was launched by Yamato Transport in 1976. Today, it is the largest express delivery company in Japan; in 2013, it handled 1.5 billion of the 3.5 billion total parcel volume in the country (a market share of 42.7%) (Yamato Holdings, 2014). The domestic parcel delivery industry in the United States is mainly dominated by three players: United Parcel Service (UPS) founded in 1907, Fedex established in 1971, and the United States Postal Services (USPS), whose predecessor is the post office system and began operations in 1971. UPS, one of the largest shipment and logistics service companies in the world, could deliver to every address in 48 contiguous states through ground service and cover all 50 states through air service by 1978 (UPS, 2014). In contrast, no single firm (except for China Postal) could cover parcel delivery nationwide during the business-to-consumer (B2C) retail boom in China in 2006. At that time, no national legislation regulated the parcel delivery industry, which had a 36% average annual growth rate from 2006 to 2013. The burgeoning online retailing industry drove this explosive growth in parcel delivery. These data indicate that total e-tailing transactions in China reached 1.84 trillion RMB (\$296 billion USD) in 2013, which allowed it to surpass the United States as the world leader in the industry (DRCSPB and Deloitte, 2014).

However, the rapid growth of e-tailing with a newly established PEI has caused a serious spatial imbalance in terms of distribution of both e-tailers and express delivery firms and their coverage. For example, the e-commerce giant Taobao emerged in 2003 in Zhejiang Province, where the market-oriented business environment has flourished with more small-sized enterprises than anywhere in the country. This regional cluster of e-tailers has taken the lead and the largest proportion of the business in China based on highly cumulative first-mover advantages. The majority of private-owned parcel express firms have also emerged from several coastal provinces, mainly Zhejiang and Guangdong. E-retailer and courier companies have largely contributed to the co-evolution promotion of these two sectors in these coastal metropolises. At the same time, the insufficiency of online demand density in inland provinces and the high cost of delivery have made e-tailing less attractive to logistics service providers as their counterparts in coastal regions. Parcel distribution in inland provinces, except for a few provincial capital cities, still generally rely on state-owned postal systems and numerous small local distribution partners to fulfill e-purchase orders. The uneven development of e-tailing and PEI not only generates the spatial co-evolution between these two sectors, but also leads to the variety and complexity of co-evolution models at the national level. As a result of the uneven spatial distribution of both e-tailers and firms in the PEI, there are over 8000 parcel delivery companies in China and the top 10 brands control more than 87% of the market share with a geographical focus on the coastal region (China E-Commerce Research Center or CECRC, 2014b). This observation contrasts with that of the three major integrated couriers that dominate the entire national market of the United States (DRCSPB and Deloitte, 2014). Our present study attempts to understand the co-evolution between e-tailing and PEI development in China and their dynamics. We will also portray the space-time course and its geographical imprints on the co-evolution between these two sectors.

This paper is organized into five sections. The B2C e-commerce business, its geographical nature, and its relationship with PEI are conceptualized in Section 2. Section 3 presents the longitudinal co-evolution course with four typical stages according to the structural features of the e-tailing supply chain (SC). Section 4 discusses the spatial strategies of the two major models identified, which present the co-evolution geographical imprints. Section 5 highlights the current implications of the co-evolution and points out several development trends of e-tailing and its logistic support that

can shape transport and economic geography at large. Two future research directions are also suggested.

Methodologically, as a study of an ongoing co-evolution case, we chose a combination of second-hand data search and in-depth interviews of key stakeholders. Through collection of information from government documents, firms' annual reports, and third party reports and analyses, we identified a chronological relationship between e-tailing and PEI development, and then conceptualized and classified several major business models. We also visited 12 representative e-commerce and PEI firms in six Chinese cities, including Beijing, Shanghai, Ningbo, Shenzhen, Wuhan, and Tianjin where we conducted intensive interviews of their mid-level operators. We do not list the names of the firms here because of our confidentiality agreement with the visited parties. Through these visits, we were able to confirm or revise our model classification. We also obtained a better understanding of the real problems these firms and stakeholders are facing, along with the changing environment of each locality which reflects the huge geographical variation in China today, for future development of e-tailing and its logistics support.

## 2. Conceptualization of E-retailing, PEI, and their co-evolution framework in China

### 2.1. Brief overview of E-retailing and PEI in China

The PEI in China can be traced back to the emerging fast delivery services for business mails or documents rather than to online shopping. China Postal initiated the Express Mail Service (EMS) in 1985 and established this monopoly for more than a decade (Fig. 1). Along with the continuous economic reforms and opening up to the global economy, the rapid growth of delivery demand in main metropolises offered significant opportunities for private couriers that can provide better services. Shunfeng Express (SF), launched in Shunde, Guangdong Province in 1993, initiatively provided one-day business mail delivery service between Hong Kong and Shunde. That same year, STO Express was established in Shanghai and focused mainly on the delivery of customs paperwork between Shanghai and Hangzhou, the provincial capital of Zhejiang Province. These two pioneers attracted many followers, with inter-city or intra-city delivery companies sprouting in various metropolises. The more popular companies, including Daily Express established in 1994 and YTO Express in 1999, adopted the franchise business model similar to STO Express to expand their geographical coverage. Although these companies were largely successful as private express firms over a decade, their delivery capacities were limited and covered only the region they initially started in, such as Yangtze and Pearl River Deltas. However, these courier companies all operated in the informal sector given the lack of formal laws and regulations in this business. The situation did not change until they started to serve as a major sector of e-tailing in about 2010.

E-commerce in China encountered fewer barriers in its early stage than the PEI. For instance, Dangdang.com started operations in 1999 as the first online bookstore in China after its American counterpart Amazon.com was established in 1995. Joyo.com, established the following year, was then purchased by Amazon.com in 2004 and renamed Amazon China. In the same year, 360buy.com, which was the precursor of JD.com, was founded in Beijing and mainly sold electronic devices online. These e-tailers usually employed local delivery companies in Shanghai and Beijing to fulfill online orders, and used the China Postal system for customers from other cities. Local distribution partners (LDP) served as subcontractors for last-mile deliveries in a faster way than China Postal in the cities connected by China

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