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Hongbo Lyu

*Zhejiang Wanli University, lvhongbo@zwu.edu.cn*

Zuopeng Zhang

*State University of New York at Plattsburgh, zzhan001@plattsburgh.edu*

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# MEASURING THE COLLABORATIVE DEVELOPMENT BETWEEN E-COMMERCE AND EXPRESS LOGISTICS IN CHINA

## Research in Progress

Hongbo Lyu  
Zhejiang Wanli University  
lvhongbo@zwu.edu.cn

Zuopeng (Justin) Zhang  
State University of New York at Plattsburgh  
zzhan001@plattsburgh.edu

### ***Abstract:***

Based on the principle of order parameter in synergetics theory, this research applies the synergistic evaluation method to measure the collaborative development between two complex economic subsystems: E-Commerce transactions (ECT) system and express logistics service (ELS) system. We plan to build an evaluation model of coordination index and then conduct an empirical study based on the statistical data between 2005 and 2014. Our research is expected to provide valuable suggestions for promoting the coordinated development between ECT and ELS systems.

### ***Keywords:***

Collaborative Development; E-Commerce; Express Logistics; Synergy

The advent of the information age has made online shopping an important part of people's daily lives. The total online retail market transactions in China exceeded 2.315 trillion Yuan in the first half of 2016, up 43.4% from that in previous year. The rapid development of E-Commerce also facilitates the growing businesses of express logistics services (ELS) as such services are essentially derived from E-Commerce transactions (ECT). ELS and ECT are two parts of an integral ecology system: E-commerce ecosystem. According to a report from National E-commerce & Logistics Development Planning (2016-2020), China's ECT and ELS businesses have become a new impetus to the development of its national economy. However, the speed of the ECT development in China is much higher than that of ELS. The rapid development of ECT businesses makes it difficult for ELS businesses to follow, resulting in an extremely low level of the synergy between them (Liu, 2015). Therefore, it's important to study the relationship between ECT and ELS, to explore the collaborative development between them, and to find a cooperative and win-win mode for them, which can further improve the development of E-Commerce, reduce the cost of ELS, enhance the circulating efficiency of ELS, and increase the demands of customer consumptions.

Synergetic theory, proposed by German physicist Hermann Haken (1983), is widely used across many modern disciplines. Studying a complex system composed of a number of subsystems with complicated interactions, the theory investigates how these subsystems

collaboratively cooperate to form an ordered structure of time, space or structure of time-space (Kong, 2013). It has been used to analyze E-Commerce systems in some recent studies (Agarwal & Wu, 2015; Chuang & Lin, 2015). However, most prior research about E-Commerce ecosystem focuses on the following two aspects: (1) supply chain collaboration management in E-Commerce system (e.g., Lu & Liu, 2015) and (2) measuring method in determining a complex system's synergy degree (e.g., Garzella & Fiorentino, 2014). Very few of them have touched upon the mutual influence of ECT and ELS subsystem. In particular, the synergy degree and collaborative development between ETC and ELS have not been formally measured.

Building upon the theory of synergetics from existing literature, this research attempts to address the research gap by proposing a synergy degree evaluation model between ECT and ELS subsystems, using the order parameter principle to evaluate the impact of different factors on the ecosystem, and exploring the interactions between subsystems. In addition, the paper also proposes to assess the synergy level between the two subsystems in terms of development scale index, identify the problems that affect the coordinated development of the two subsystems, and make recommendations to promote their collaborative development. Specifically, we plan to build an evaluation model of coordination index and then conduct an empirical study based on the statistical data between 2005 and 2014. Our research will provide valuable suggestions for promoting the coordinated development between ECT and ELS systems.

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