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Zhuofan Yangs, Yong Shi, Hong Yan

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## SCALE, CONGESTION, EFFICIENCY AND EFFECTIVENESS IN E-COMMERCE FIRMS

**Zhuofan Yang**

Research Center on Fictitious Economy and Data Science  
Chinese Academy of Sciences, Beijing 100190, China

and

School of Economics and Management  
University of Chinese Academy of Sciences, Beijing 100190, China

**Yong Shi**

Research Center on Fictitious Economy and Data Science  
Chinese Academy of Sciences, Beijing 100190, China

and

Key Research Laboratory of Big Data Mining and Knowledge Management  
Chinese Academy of Sciences, Beijing 100190, China

**Hong Yan**

Department of Logistics and Maritime Studies, Faculty of Business  
The Hong Kong Polytechnic University, Hong Kong, China

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**ABSTRACT**

This research examines what affects operations efficiency and explains the paradox of high efficiency and low profits using a two-stage analytic framework. It provides a brief overview of efficiency evaluation research for e-commerce, and establishes a set of efficiency evaluation criteria, with the application of *data envelopment analysis* (DEA). The results suggest that e-commerce firms suffer from input congestion. Also, scale and technology issues, as well as low economic effectiveness, lead to the overall operational inefficiency. *Business-to-business* (B2B) e-commerce was more efficient and effectiveness in 2014, while *online-to-offline* (O2O) commerce had steadier and faster growth. In general, the performance of e-commerce firms is becoming better over time. The findings of this research can help managers to improve their firms' efficiency levels by resizing their operational scale, strengthening their technology infrastructure and applications, and improving their discretionary allocation of resources.

**Keywords:** Congestion, data envelopment analysis (DEA), e-commerce, efficiency, effectiveness, mathematical programming, production economics, returns to scale

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