



13th Global Congress on Manufacturing and Management, GCMM 2016

Research on Network Equilibrium Model of Online Shopping Supply Chain System in Promotion Based on Customer Behavior

Ye Zhou^a, Jue Zeng^a, Mengxiao Zhang^{a*}, Hui He^b

^a*School of Economics and Management, Nanchang Hangkong University, Nanchang, 330063, China*

^b*School of Business, Jiangxi Normal University, Nanchang, 330022, China*

Abstract

Consider the goods price and delivery cost which are the influence factors of customers' online shopping behaviours. It established a market demand function for E-enterprise different sales models. Based on it, the network equilibrium model of online shopping supply chain under the E-enterprise's sales promotion environment is established. The equilibrium model includes four levels decision-makers: supplier, E-commerce enterprise, logistics service providers and customer. It studied the network equilibrium condition of online shopping supply chain based on variational inequality under the E-commerce enterprise sales promotion model. And make economic explanations. Finally, the effectiveness and rationality of the model is verified by a diffeomorphism.

© 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the organizing committee of the 13th Global Congress on Manufacturing and Management

Keywords: Customer behavior; Online shopping supply chain; Network equilibrium; Variational inequality

1. Introduction

Since 2000, China's e-commerce business has entered a period of rapid development. Especially the famous domestic business enterprise Taobao network for the first time to carry out “Double Eleven Promotion” has achieved amazing benefits in 2009. The “Double Eleven Promotion” in 2014, Tmall turnover reached RMB 91.217 billion, resulting in 467 million logistics orders. In contrast, partial businessmen face a dismal performance. The reason is that the E-commerce enterprise to buyer of the consumer behavior without a thorough understanding, not clear how to coordinate between the commodity price promotion and logistics distribution service. What is the impact of consumer behavior on market demand, and how to achieve the equilibrium state of the online shopping supply chain when E-commerce enterprise promotional? Therefore, in order to promote the healthy development of e-commerce

* Corresponding author. Tel.: +86-0791-83863758.

E-mail address: 510742430@qq.com

supply chain system, it is necessary to study the balance of online shopping supply chain system from the perspective of consumer behavior.

Li [3] pointed out that the equilibrium state refers to the dynamic equilibrium state of each element relation in the system, or the relative stable relationship between the system and the environment. Logistics system is a subsystem of supply chain system, and the supply chain system is the extension and development of the logistics system. When the supply chain system reaches the equilibrium state, the logistics system will reach the equilibrium. Supply chain network equilibrium concept was first proposed by Nagurney [5], who first described the manufacturing enterprises, retailers in the supply chain competition, the purchasing behavior of consumers, and then through the variational inequality established the supply chain network equilibrium model; Moreover, Nagurney [6] expand the supply chain network equilibrium model to study various uncertainties, including from suppliers from the demand uncertainty, market uncertainty, the equilibrium conditions of various transportation modes of the time cost of uncertainty[4-7]. Hammond [1] from network equilibrium model studied the closed - loop supply chain network.

Yang and Wang [10] studied the closed-loop supply chain network equilibrium problem under the third-party recycling model. On the other hand, Qiang and Anderson [8] analyzes the closed-loop supply chain network equilibrium under the environment of channel investment and uncertain demand. Then, he [9] also studies the network equilibrium of the two cycle closed-loop supply chain, which contains only the manufacturer and the consumer. Zhu and Hu [12] first put forward the concept of online shopping supply chain in our country, points out that online shopping under the background of the supply chain is composed of a manufacturer, shop operators, courier service providers and consumers, online shopping is a supply chain composed of supply chain network online shopping system. Hu [2], in addition to, have assumed that in the network between retailers and consumers that goods flow can be provided by customer self realization, can also be achieved by courier service, established e-commerce online shopping supply chain network equilibrium model. All these articles construct the three-level or four-level supply chain network model respectively. Most of the domestic and foreign scholars study the supply chain network on the basis of a certain condition and the research on the online supply chain is at the initial stage. In additional, in building the network supply chain network equilibrium model, it is more rare to consider the influence of consumer behavior in the mode of E-commerce business promotion.

Based on the study of the above, in this paper, we further considers the impact of consumer behavior on online shopping supply chain system equilibrium in online shopping supply chain system when E-commerce enterprise promotional, and constructs the market based on the behavior of consumers in different sales mode demand function, according to this market demand function to build online shopping supply chain network equilibrium model, which reveals the E-commerce business enterprises in the promotion of online shopping supply chain system at all levels of decision-maker behavior of the optimal decision-making.

2. Consumer Choice Behavior and Market Demand Function

Consumers choose when to buy goods is based on the evaluation of goods produced. Assume that the consumer is rational and that the evaluation of the commodity takes into account only the cost of the commodity and the cost of the logistics (including the time cost to the consumer due to the lag of the logistics service), and the consumer decides when the purchase of goods from the residual effect, focusing on the price of the cost of consumers will not buy goods in peacetime, focusing on logistics costs of consumers will not buy in the promotion of goods. Assuming the usual price P_1 , the price when the promotion P_2 , the market share is 1. Consumers for online shopping logistics cost evaluation value T , T obey the uniform distribution $[0, 1]$, the density function is $f(t) = \begin{cases} 1, & 0 \leq t \leq 1 \\ 0, & \text{others} \end{cases}$. Continue to assume that consumers of logistics cost and price cost evaluation value of bias, and x when equal to 0 consumers only care prices cost, this time the consumer only considered the prices cost, and do not care about the logistics cost, and will choose the high cost of logistics and low cost of promotional time to buy goods; when equal to 1, said the price of goods cost and logistics costs to consumers without difference; When x tends to be infinite, that is consumers only consider the logistics cost of goods, and do not care about the prices cost. Therefore, $C=Tx$ is the cost of goods for consumers to evaluate the value of factors, When the cost of the goods does not exceed the consumer goods value, consumers will choose to buy this product, so that $P_1 > T$, consumers will not buy goods in peacetime, when $P_2 > Tx$ consumers do not choose to buy goods in the sales season; and when $P_1 \leq T$, $P_2 \leq Tx$ and when

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات