Research on the Selection of Business-to-Customer e-commerce Logistics Model Based on Analytic Hierarchy Process Method

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Abstract- In recent years, Business-to-Customer (B2C) e-commerce has become one of the largest e-commerce transaction models. As an important link in the e-commerce transactions, logistics has an increasing impact on e-commerce. Analysis for enterprise logistics mode becomes particularly important. This paper analyzes the domestic e-commerce transaction scale changes in recent years by using Analytic Hierarchy Process (AHP) to study factors which affecting logistics, and ultimately proposes a new approach to help companies choose their own suitable logistics model.

Keywords- AHP, B2C, e-commerce, logistics model

I. Introduction

Currently, the development of Business-to-Consumer (B2C) e-commerce faces three bottlenecks which are network security, online payment and logistics distribution[1]. With the rapid development of computer technology and the third-party payment platform, the former two problems have been improved. How to choose a proper logistics distribution model is still a big problem. Logistics distribution as "the last mile" of B2C commerce e-commerce is an important part of the user experience[2-3]. This paper develops a practical approach for the selection problem of B2C e-commerce Logistics Model.

II. Development of E-Commerce

With the development of IT Industry, e-commerce has been becoming the most popular business model and even to be almost omnipresent in people’s life, and will continue to develop at a faster speed. According to a survey in 2014, the number of Internet users in main land China has reached 632 million. The e-commerce market has reached 12.3 trillion RMB. The per capita consumption is nearly about 20,000 RMB, 21.3% more than that of 2013. See Fig. 1 for e-commerce transaction size during 2011-2014.

B2C, Business-to-Consumer e-commerce model, one of the most important e-commerce sales models, has been rising in recent years. As shown by iResearch report in the third quarter of 2013, China's Internet market transaction estimated at 454.76 billion RMB, of which 36.6% belonged to B2C model. As Fig.2 shows, the transaction size of China's online shopping in the first quarter of 2012 to the third quarter of 2013.

Fig.1 2011 to 2014 e-commerce transaction size
III. Alternative logistics models of B2C

By a summarization and detailed analysis on the basis of above statistics, we can see that B2C market transaction scale is huge in recent years, and therefore results in a corresponding increase in the number of transactions. So how to choose a suitable logistics mode becomes an urgent and important issue with top priority. Such a logistics and distribution model can not only help cost saving in terms of business running and production for the enterprises, but also improve relationships & cooperation between enterprises and consumers. Consumers spending will also be promoted. Logistics and distribution model will directly affect the company's sales performance as an important hub between businesses and consumers. At present, most enterprises of B2C e-commerce model mainly adopt three types of logistics models as bellows.

A. Third-party Logistics Model

So called third-party logistics model is that the product supply-side sign contract with a third party Logistics Company who will professionally deliver materials to the demand-side. This mode mainly occurs in e-commerce transactions. Compared with traditional logistics, the third party logistics model is more faster and efficient and also cost saving. Whereas, the only side-effect is that over-reliance on this distribution model will weaken the contact and relations between businesses and customers.

B. Company's own Logistics Model

The company's own logistics model is that the supply-side builds own delivering system to accomplish its materials distribution. Currently, there are two kinds of e-commerce enterprises using this type of logistic model. One kind is the newly emerging relatively large professional e-commerce companies which provide logistics services for the demand side through a scientific logistics management systems to reduce product costs. The other is the traditional large-scale manufacturing factories which build their own e-commerce sales system, and their own logistics model for material distribution. By this way, the supply-side can directly contact with the demand-side so as to complete the transactions much more coordinated and simpler.

C. Logistics Alliance Model

Logistics Alliance Model is something like a strategic logistics cooperation among supply-side, demand-side and professional logistic company on the basis of mutual benefit. A formal cooperation agreement among the three sides will be signed to achieve a win-win situation.

IV. Logistics Hierarchy Model

Analytic Hierarchy Process (AHP) is a kind of method trying to more effectively solve a complex problem by analyzing the related various factors which can be divided into different levels through systematic and hierarchical analysis in order to find the key factors. Generally the problem to be resolved can be put into three levels, the first layer is the target layer (Goal) which corresponding to the logistics mode selection G; the second layer is criterion layer (Norm) that is the factor layer which corresponding to the middle part of Fig.3 (the third layer F1-F8[5,6]; the final layer is the scheme layer (Scheme) which is the feasible option to