

# Research on Commodity Collaborative Logistics Service System under E-commerce Environment

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**Abstract.** The development of commodity E-commerce have the problem of "emphasize trading but ignore logistics", which results in the online transactions out of touch with supporting logistics services and restricts the development of commodities E-commerce. The commodity E-commerce and supporting logistics services need to operate synergistically in order to meet the demands of the traders, the logistics service providers and other stakeholders. This article first analyzes the demands for the modern commodity E-commerce and collaborative logistics services, and then focuses on how to construct the commodity collaborative logistics service system under E-commerce environment. The purpose of the system is to meet the service demand of the participants in E-commerce and achieve integrated operation of online trading and logistics services.

**Keywords:** Commodity, E-commerce, Logistics service

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## 1. Introduction

Currently there is a phenomenon of "emphasize trading but ignore logistics" in the development process of the commodity E-commerce. The E-commerce and supporting logistics services don't develop collaboratively [1]. We know that the commodity has a large number of trading and a high degree of standardization, which closely links with the production chain and is the main components in the field of E-commerce. Therefore, the development of collaborative logistics services is an important factor to break the bottleneck of the commodity E-commerce [2]. So we construct a commodity collaborative logistics service system according to the demands of participants under E-commerce environment in this paper. The system is based on the electronic

warehouse receipts to solve the problem of the separation between online trading and logistics services.

## **2. The Present Situation of China's Commodity E-commerce Platform**

At present, the domestic commodities E-commerce platform can be divided into three types according to the contents of service.

The first type of platform provides only some news and information and cannot support online transactions. Most of platforms can provide industry-related information, including industry news, price information, and analysis of market and so on. Users can get commodity-related national policy, market trends, import data and export data through the powerful information network. These provide references for the users when they need make production and operation decisions. In addition, users can post corporate advertising, supply and demand information on the internet and can exchange businesses with each other through information center.

The second type of platform is able to provide simple online trading services except some news and information. These platforms have certain credibility and financial regulatory system, which can meet the needs online transactions for the user. The platform needs to strictly review trading qualification of both transactions and keep reliable enterprises on file in order to improve the contract performance ratio. Furthermore, the platform also needs to provide reliable settlement services for enterprises. But the online trading has no perfect trading risk control measures so that it has big risks.

The third type of platform can provide more personalized services in addition to the services provided by the other two platforms, for example, logistics services and financing services. The combination of E-commerce and logistics informatization has become more and more critical in the process of enhancing the overall level of commodity E-commerce platform. Therefore, this kind of platform complies with the trend of combination of electronic commerce and logistics and provides logistics services and online financing services for customers. Take the Guangdong Plastics Exchange ([www.gdpe.cn](http://www.gdpe.cn)) for example, the Guangdong Plastics Exchange has the domestic largest commodity electronic trading building and specific delivery warehouses. It constructed a management platform with logistics informatization for the commodity electronic trading. The platform realizes information management of commodity E-commerce and logistics services.

About 10% of the commodity E-commerce platform offers related logistics

services and financial services according to incomplete statistics. But these logistics services exist independently with respect to electronic transactions. And the logistics services and electronic transactions don't exist in the same system.

### **3. Demands for Commodity Collaborative Logistics Services under E-commerce Environment**

Nowadays domestic commodity E-commerce websites generally offer basic business functions such as matchmaking trading and providing business information service, which cannot meet the participants' demands for the integration of trading and logistics service. Because the integrated E-commerce includes the main links of pre-trade, trade and post-trade, not only refers to the online trading. And it can achieve the collaboration of online transactions and supporting logistics services.

The participants of the integrated E-commerce mainly include platform, traders, logistics service providers and financial institutions.

The platform can become the information hub between traders and logistics service providers, provide more efficient and secure transaction modes for dealers and provide information related to logistics services in real-time. And the platform can realize the tracking and supervision of logistics transportation services and allow traders to get real-time payment for goods.

Traders hope that they can publish their own logistics demand information on the platform, get the service information of logistics service providers online and grasp the market logistics services, related costs, and other information in order to save time and logistics costs. The platform can achieve electronic transmission of the bill of lading and logistics contract and realize logistics tracking in the whole transportation process of the goods. What is more, traders can achieve the settlement payment of goods in real time and use goods for short-term financing.

Logistics service providers can get logistics demand information online in real time and initiatively provide logistics services business according to their own actual situation. And they can publish logistics service supply information through the platform and let traders contact with them initiatively after they understand their advantages.

Financial institutions can achieve data docking with the e-commerce platform and implement electronic payment of the goods' payment as well as logistics costs. The platform can provide credibility and guaranty of pledge for the short-term financing for SMEs so that the financial institutions never need the links of

credibility investigation, property pledge and others for the financing objects.

Logistics informatization is an effective way to meet the needs of all parties. So we use the electronic warehouse receipt to achieve logistics informatization [3]. In this paper, the electronic warehouse receipt is a kind of electronic voucher based on E-commerce platform. The essence of electronic warehouse receipts is the informatization of commodity, which makes the goods flow by way of information before delivery and reduce the logistics circulation. And the logistics informatization makes commodity information and logistics information to achieve docking in order to realize collaborative operation of E-commerce and logistics services.

Goods which can generate electronic warehouse receipts are to go through rigorous testing by the delivery warehouse to ensure stable quality and their quantity, specifications and grades are divided by the standard according to a certain standard. The pattern of E-commerce trading has the characteristics of digitalization and standardization based on electronic warehouse receipts. And it can help the platform achieve seamless docking with logistics.

#### **4. The Function Design of the Collaborative Logistics Service System**

To satisfy various service requirements of the participants, the collaborative logistics service system should achieve the whole journey collaborative management by using the synchronous information transmission between online and offline services.

The overall architecture and organizational structure of the system is as the fig1 shows.

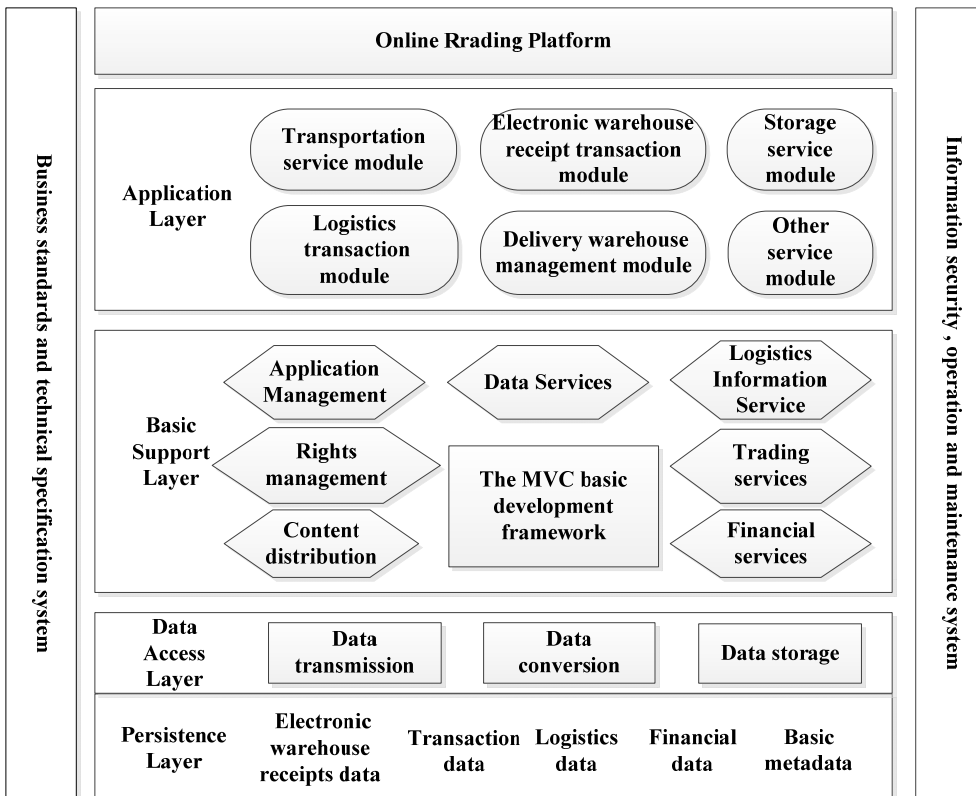


Fig. 1: The overall architecture and organizational structure of system

The system links the warehouse transactions, logistics transactions, transportation services, warehousing services, online pledge financing and other functions (as the fig2 shows) to achieve four flow linkage of the information flow, business flow, logistics and capital flow and to reduce the cost of commodity circulation effectively [4].

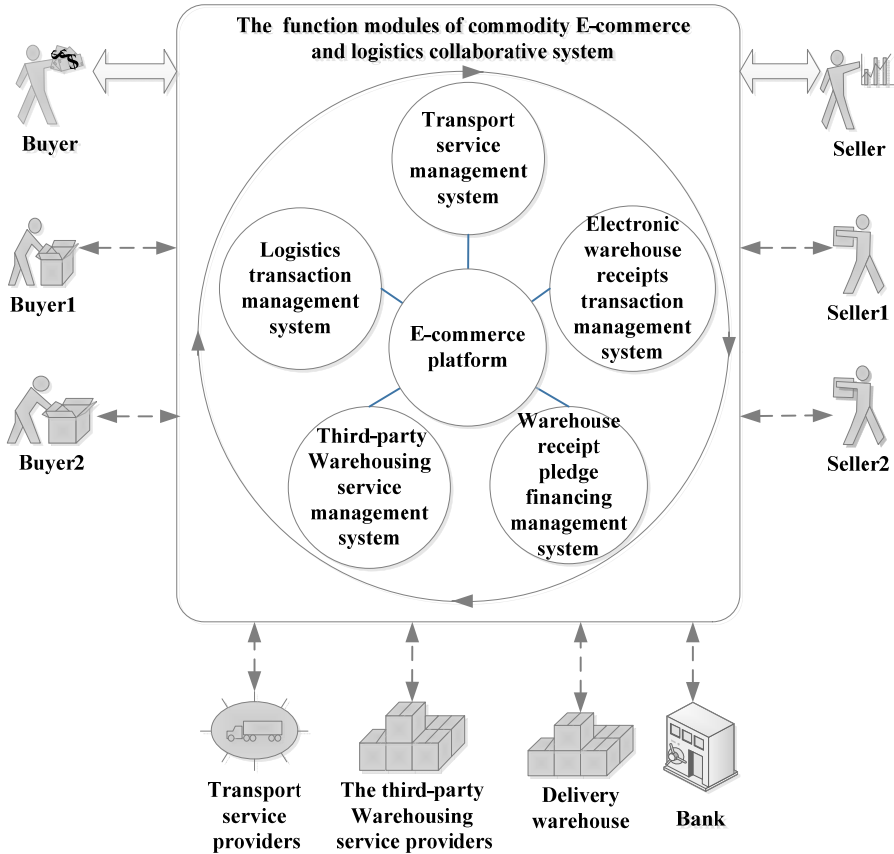


Fig. 2: The function modules of the collaborative logistics service system

For the traders, the system's main function is to establish an e-commerce platform for combining electronic warehouse transactions with logistics services. Traders can take advantage of warehouse receipts to get more efficient and secure transactions, find suitable logistics service providers with signing online logistics commission contract to get thoughtful and convenient logistics services in a timely manner, track and supervise the goods during the whole transport to ensure the goods reach their destinations in time and safely. At the same time, traders can use the electronic warehouse receipt to get pledge financing; the financing method is safe and effective and can solve the problem of financing for the SMEs.

For logistics service providers, they can publish car source information and warehouse supply information through the e-commerce platform and get the logistics demand information of the traders in real time so that they can trade more conveniently and fast with the commissioning party. The costs of logistics transactions can be paid electronically.

For financial institutions, they realize the docking of data with the e-commerce platform. The platform can provide credibility and guaranty of pledge for the short-term financing for SMEs so that the financial institutions never need the links of credibility investigation, property pledge and others for the financing objects.

## **5. The Function Realization of the Collaborative Logistics Service System**

The entire system is supported by the E-commerce platform and is aim to meet the service requirements of the participants. Especially, the warehouse receipt transactions and logistics services are in synergy so that the participants get integrative services before, during and after trading [5].

The operational processes of the function realization are as follows.

(1) Submitting an application for transporting the goods to the delivery warehouse. The seller of goods needs first to land its personal account of the platform and submits an application for transporting the goods to the delivery warehouse. After the seller's application being verified and qualified by the platform, the platform will allocate the location of the warehouse reasonably according to the situation of the delivery warehouse and seller's goods.

(2) Logistics transactions (transportation service transactions). As the fig2 shows, after seeing the allocation of warehouse, the seller (now also is the entrusting party) can arrange vehicles to transport goods to the delivery warehouse by relying on their own or entrust right transportation service providers to transport goods by seeking and trading with them on the platform.

Logistics transactions is a kind of trading that the entrusting party trades with right logistics service providers by viewing their information and seeking them through the platform. And it can be divided into online transactions and offline transactions. Online transactions mainly refer to that the sellers determine the final logistics service providers by way of bidding and sign online entrustment agreements with them owing to the many-to-one relationship between logistics service provider and the entrusting party. And the platform tracks and supervises the transport vehicles in transit to ensure the goods reach delivery warehouse safely and promptly. Offline transactions mainly refer to that the sellers contact logistics service providers offline without the platform's tracking and supervising in transit though they find suitable service providers on the platform. Of course, the former will pay more information costs than the latter for the platform. So the seller can choose suitable way to trade when necessary. The process of logistics transactions shows as the fig3.

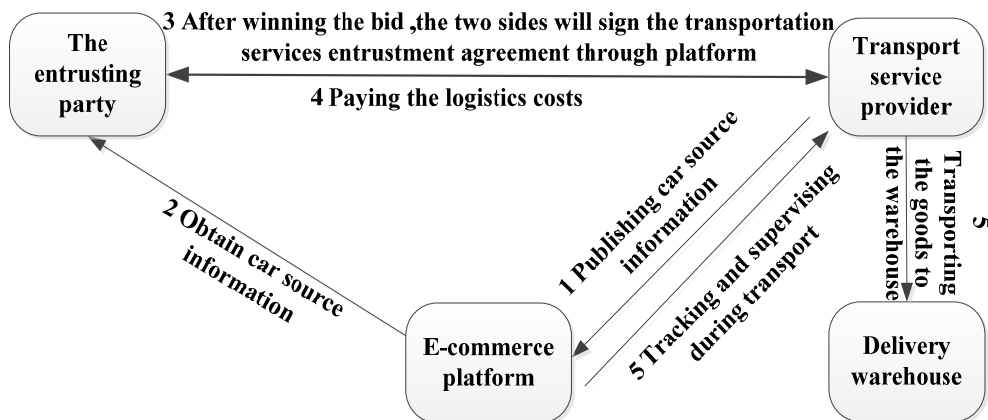


Fig. 3: The process of logistics transactions

(3) Transporting into the delivery warehouse. E-commerce platform mainly racks and supervises the transportation service providers in transit which have reached logistics transactions online and transmits the information of goods in transit to the sellers in real time. The entire logistics transaction will be completed after the seller confirms that the goods have been transported to the warehouse.

(4) To generate electronic warehouse receipt. The delivery warehouse will test the quality of the goods strictly and grade the goods according to the commodity standard after the seller's goods are transported to the warehouse delivery. And then, the administrator of delivery warehouse will login the delivery warehouse management system of platform for inputting the specific information of goods. The system can generate standardized electronic warehouse receipt automatically and deliver the receipt to the seller's personal account.

(5) Electronic warehouse receipt transactions. The electronic warehouse receipt transactions mainly use the online matchmaking transaction mode. The traders in every transaction should carefully read the price match system, the conclusion of contract system, settlement system, delivery goods system and so on; these systems are related to the trading patterns of the platform. After the seller holds electronic warehouse receipts, they can hang out them at the right price in the platform. The system will bring the buyer and the seller together online according to buyer's demand information. When the match is successful the two sides reach a deal, and then the buyer becomes the owner of the warehouse receipts. The owners of the receipts have the ownership of the goods in delivery warehouse, and they can use the receipts to trade online again or



apply to deliver goods.

(6) Electronic warehouse receipt pledge financing. The owner of the receipts can use the warehouse receipts to conduct pledge financing business in addition to electronic warehouse receipts transactions. The electronic warehouse receipts for pledge financing cannot be used for any other business and their estimated value must be higher than the amount of financing (as the fig4 shows).

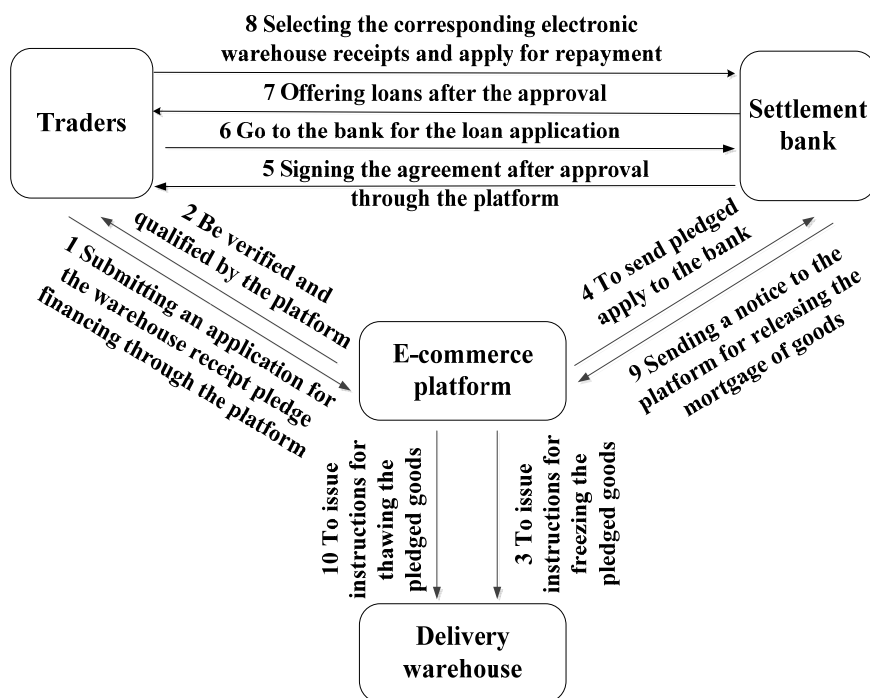


Fig. 4: The business process of electronic warehouse receipt pledge financing

(7) Apply for the delivery of goods. The electronic warehouse receipts which are not used for pledge need physical delivery within the prescribed period according to the provisions of the platform. So the owners of warehouse receipts need to put forward apply for delivery of goods online to the platform and arrange vehicles for shipping goods out of the warehouse after the platform’s examination and approval.

(8) Logistics transactions (transportation service transactions). The traders need logistics service transport goods out of the warehouse when they delivery goods. The logistics transactions of this step are same as the step 2. The traders can not only arrange vehicles for transporting offline by their own but also trade with transportation service providers online.

(9) Transporting goods out of the delivery warehouse. As transporting goods

into the delivery warehouse, the platform tracks and supervises the transportation service providers in transit which have reached logistics transactions online and transmits the information of goods in transit to the sellers in real time to ensure the goods reach destination safely and promptly. The entire logistics transaction will be completed after the trader confirms that the goods have been transported to the destination.

(10) Logistics transactions (the third-party warehousing services transactions). The third-party warehousing service providers can release warehouse supply information in the e-commerce platform; traders can undertake logistics transactions with them and store goods temporarily in the third-party warehouse. The process of warehousing services transaction is similar to the process of transportation services transaction, but platform don't supervise the goods in third-party warehouse.

In brief, the online trading information and collaborative logistics services information achieve effective coordination and sharing in the entire system. The system can solve the problem of offline transporting and storing goods by prompting the traders to trade with the right logistics service providers in time. And it provides a platform which can be used to publish information for the logistics service providers so that logistics facilities resources are fully utilized.

## **6. Conclusions**

The prosperity of E-commerce cannot depart from the support of modern logistics. So this paper regards the coordinated development of E-commerce and logistics as a concept and proposes the commodity collaborative logistics service system under E-commerce environment. The system combines the commodities electronic trading with the supporting logistics services, which not only improve the transaction efficiency and enhance the transparency of transactions and the rate of contract performance but also guarantee the quality of trading products through standardized delivery warehouse and solve the problem of "easier trading than logistics services" through the integration of logistics resources to achieve efficient circulation of commodities under E-commerce environment.

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