Supply Chains of Cross-Border E-commerce in China
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Keywords: Style; Supply chain; China.

Abstract. A feature of e-commerce is worldwide coverage. Almost any person or company can be a customer of an online shop. However, this common availability is in practice quite apparent. Despite the dynamic development of e-commerce, communication in other languages, the form of payment, currency, legal and tax conditions, as well as the delivery of products remain barriers to the free cross-border flow. This paper focuses on China. The lack of delivery of goods to a distant place or a relatively long time and high cost of providing the purchased product hinders further development of e-commerce. This problem can be solved by introducing an intermediary that consolidates shipments from many retailers and delivers them to many clients scattered in different corners of the world.

Introduction
The rapid development of the Internet, and thus also e-commerce, has created new distribution channels for many trading, service and manufacturing companies. e-commerce is one of the main factors leading to better prosperity and competitiveness of China. It has significant potential that may contribute to economic growth and employment. It is expected that its further development will have far-reaching effects, perhaps even exceeding the changes that concerned trade over the past several decades. Physical presence while shopping is becoming less and less important. Customers buy products, placing orders electronically, and the purchased goods are delivered to their workplaces, homes, click & collect points and parcel lockers. Placing ordering in this way replaces the trip to a store, and the delivery of the consignment eliminates the way back with the purchased goods.

In contrast with traditional trade, online shopping is inseparably associated with the delivery to the final customer (so-called last mile), i.e. the most complicated and costly process in the whole supply chain. Internet retail businesses carry out a very large number of small orders. Unfortunately, there are delays in deliveries about which buyers are not informed at all. Customers often do not have too much influence on the choice of the company that will deliver the goods, either. The delivery of the goods is most frequently performed by CEP (courier, express and postal) companies.

Additionally, more and more attention has recently been paid to expanding business activities beyond the borders of a single country. Sellers look for new buyers abroad, while customers want to have a greater choice of suppliers. A trend in e-commerce arises, then, which is defined as cross-border trade. It is particularly evident in the countries of the China Union. It is based on selling products to customers who are located in another country. However, it is related to several problems, such as a high cost and long delivery time, language barriers, different legal regulations and taxes, etc. The high cost and long delivery time are, in turn, associated with the aforementioned problem of the last mile, but also with the problem of the relatively small flow of goods between countries which is realized by a single CEP operator. So the economies of scale do not take place yet.

Therefore, there is a real need to offer e-commerce to retailers and to, indirectly, recommend comprehensive services to their customers, which would include, on the one hand, logistics services in Europe, and, on the other hand, full information on the quality of the service.

Cross-border E-commerce in China
Currently, e-commerce can be divided into several trends in the field of logistics, which will
determine further development of the CEP industry. These are: reverse logistics, same-day delivery, development of new models of cooperation in logistics (drop shipping, fulfillment, one-stop e-commerce), broker services and cross-border transport.

Cross-border e-commerce still has a relatively small share in the whole market of e-commerce. In 2017, approx. 15% of the China inhabitants made a purchase from sellers from a different country. This represents an increase in the share of this type of trade by 25%.

It can be seen from these data that the potential of electronic cross-border trade within the China still remains unexploited. Only 8% of companies are involved in cross-border selling. Managers of these enterprises argue that it is too complicated and too expensive. As part of the efforts to unleash the potential of e-commerce, the European Commission has adopted a package of proposals to stop the unjustified geo-blocking, increase the transparency of package delivery prices, and improve the enforcement of consumer rights.

**Logistics Problems of Cross-border Commerce**

The logistics of products offered by online stores is one of the basic factors influencing the consumer's decision about making purchases in them. Deliveries and product returns are one of the most important issues for both online shoppers and online stores in the China. The European Commission indicates that the problem lies in particular in cross-border deliveries of packages realized for the needs of small and medium enterprises and those sent to the less developed and less accessible regions. Therefore, it puts a lot of effort into increasing the availability of e-commerce for all EU citizens and businesses, regardless of their size and location.

Another problem is the relatively little access to information about the CEP market, in particular about the available services, operators and prices. Many customers know only certain operators whose services they could use. In the case of cross-border transport, they can choose between an international courier service or a common service provider, so the postal operator. This makes it difficult for new entrants to gain market share and reduces the competitive pressure on the existing operators, which in turn limits the incentives to improve the service quality and leads to higher prices.

Currently, online stores selling their products abroad incur a very high cost of shipping - depending on the country it is up to 5 times higher than the cost of a consignment realized within the country. The lower price of the product sold does not often compensate for the cost of delivery, which discourages buyers from abroad. It is one of the greatest barriers to the development of cross-border trade conducted via the Internet. Consumers and small enterprises claim that the problems with the delivery, in particular the high prices, prevent them from increasing the sales or purchases in other Member States. Foreign exchange in e-commerce could be completely different if these costs were significantly reduced.

Apart from the cost of delivery, another barrier to the development of cross-border e-commerce is the delivery time. It results mainly from the distance between the vendor and the customer. In most cases (mainly outside the border regions) it will be much greater than in the case of domestic shipments. In international trade, shipments often have to undergo additional operations, go through a greater number of hubs and branches, which further prolongs the time of delivery.

**The between Online Shops with Cross Border Trade**

This problem can be solved by introduction of an additional entity to the cross-border e-commerce in the form of a consolidator. In the literature, such an entity is defined as the fourth party logistics (4PL). It manages the flow of information between the supplier, customer and logistics service provider. The consolidator proposed in this study acts like the CEP brokers, already present on a number of national markets for several years. The difference between them is that the broker only wins transport orders and passes them on to the CEP operator which decides how to transport the consignments; the consolidator, in turn, additionally selects the carriers for the service. The
The consolidator does not possess any means of transport. It can be said that it configures a temporary supply chain for the needs of a single transaction.

The consolidator has a website which enables to find offers, compare them, monitor shipments and make payments. However, the consolidator automates their business with continuously cooperating customers by providing the API (application programming interface) and integrating with sales platforms. Such platforms group and systematize up-to-date information about CEP services and prices, which helps make the decision about the company that delivers shipments. On the basis of specific criteria such as the place of origin and delivery, dimensions and weight of the parcel, the user is given appropriate cross-border transport offers by the system. The consolidator’s system automatically recommends the shipping options that are adjusted to the ordered products to the customer of the online store. For example, for a larger package courier or mail services are suggested rather than delivery to a parcel locker. Depending on the planned date of delivery, the system may offer different prices. Express deliveries by air freight will be more expensive than the economical road transport.

Moreover, the system automatically generates the shipping documents (picking list to the warehouse, labels to be stuck on packages), monitors the realization process and informs the e-seller and the customer about the current status of the delivery.

For customers, besides time, certainty of delivery of the product is important. Ordering in foreign stores, customers express concerns not only about when, but also whether at all and in what condition they will receive the shipment. They must therefore have constant access to the information about where the consignment is located and what the expected date of delivery is. This will be possible thanks to the track & trace system.

The consolidator does not need to invest in infrastructure, because it uses the resources of other organizations. Its key task is the right choice of carriers assigned to the individual routes and time synchronization of the operation of individual vehicles in the region and between regions and of the work in the terminals and hubs. The consolidator, collecting orders from a number of senders, becomes a “big” customer of courier and postal companies. This increases the bargaining power and allows to get much better cooperation conditions than individual customers are offered, sending small numbers of shipments.

Managing the consolidator’s activities organized in this way requires application of complex IT systems. Such a system should integrate all the terminals and hubs of many different logistics service providers. This requires interoperability between the systems, and so mutual access to necessary data. In addition, standardization of the processes and the used infrastructure is needed. For example, shipments are transported in certain loading units, and the barcode labels describing the shipment (details of the sender and recipient, terms of delivery, etc.) must be processed by the various entities dealing with the shipments.

All the data concerning the shipments and carriers are placed in a data cloud by the consolidator. This ensures access to the system for all stakeholders anywhere in the world. Moreover, each driver is equipped with an electronic device which is used to scan the code from the shipment, receive information about the shipment and send the data.

Customers of consolidators may mainly be micro, small and, partially, medium-sized companies that run their business on the Internet, i.e. online shops and sellers at online auctions.

**Conclusion**

The model proposed in the study significantly reduces the number of the sorting and handling operations. It solves the problems of the organization of international logistics, and in particular the one with the high cost of deliveries, by consolidating shipments from various senders depending on the country of delivery. This will help to achieve the economies of scale - the CEP operator can offer better price conditions for a larger number of shipments. Additionally, thanks to the support of the
supply chain by a single system it will be possible to track the shipments. Apart from the possibility to lower the costs, the limited number of operations reduces the risk of the goods being damaged during loading, unloading and so on.

References