Study on Strategies of Improving CHINA RAILWAY Express
Based on Product Life Cycle Theory

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Abstract. Under the background of the Belt and Road, CRexpress was operated through linking China and Europe and other countries along the Belt and Road. Combined with the development of CRexpress in recent years, using the product life cycle theory, this paper divides the life cycle of CRexpress and analyzes its stage features and planning goal. Mainly from aspects of source of goods and transport organization, some strategies are proposed to further improve and develop CRexpress.

Introduction

CHINA RAILWAY Express (CRexpress) is the international railway through transport trains running among China, Europe and other countries along the lines of the Belt and Road, and it is operated in accordance with fixed train number and line [1]. With the propelling of the Belt and Road construction, the economic and trade links among China, Europe and other countries along the lines develop quickly and have produced a strong logistic demand. This is bringing a precious development opportunities for CRexpress. Since the first operation of CRexpress in 2011, it has been six years. During this period, it has achieved a lot and caused wide concern home and abroad [2]. CRexpress now has been a new known brand communicating the trade and business among China and other countries in Europe.

Although CRexpress has experienced a fast development, it is coincident with a couple of problems [3, 4]. Many researchers established mathematical models to optimize location of supply-hub and freight transport product [5,6,7,8]. This paper will study the product stages of CRexpress and come up with some suggestions to improve CRexpress on the basis of product life cycle theory.

Product Life Cycle Theory

Product life cycle indicates the whole lasting time of a product from being introduced into the market, through growth stage, mature stage, recession stage till to be market obsolete and the enterprise does not produce it any more. According to the product life cycle theory, any product will not be needed unchangeably by the society. It must experience a procedure of occurring, developing and obsolete. When a product is being a different stage of the life cycle, marketing strategies should be different [9].

Introductory stage. After a product is designed and produced, it will be input into the market, which means it has gone into introductory stage. In this stage, since customers know little about it, they will purchase little of this product. The enterprise should focus on the sales promotion and product price, this will expedite the product going into the market and improve its market share.

Growth stage. In the introductory stage, if the trial sale has a better effect and customers gradually accept the product, this means it has gone into growth stage. In this stage, customer’s demand quantities increase, the sales climb quickly. The enterprise should produce more product and will gain more profits, also it may face more competitors.

Mature stage and Recession stage. If the market demands tend to equilibration, the sales are steady, the product gets to standardization and the increasing speed becomes slow, this should be
mature stage. When the sales and profit of a product go down all the time, the product becomes old and a new and better product has appeared, this means it has gone into the recession stage.

The life cycle of general product may be described as Fig. 1. It is also fit for transport product. When designing and producing a transport product, the sales are zero; In the introductory stage, few customers choose this transport product, the transport volume, i.e. the sales climb slowly and the transport enterprise gains low profits; In the growth stage, more and more customers choose this product to transport their goods, the sales climb quickly and the profits increase remarkably; In the mature stage, the profits reach the peak and then go downhill; In the recession stage, the sales decline remarkably and the profits creep down sharply.

![Figure 1. Product Life Cycle Curves.](image)

**Analysis on the Product Life Cycle of CRexpress**

CRexpress is a transport product operated mainly by China railway. Let’s simply look back its development process. The first CRexpress train departed from Chongqing to Duisburg in Germany on March 19th, 2011. The total CRexpress trains reached 6000 on November 17th, 2017 [10]. During the more than six years’ time, CRexpress has different increasing speeds. From the first train to 1000th train, it took 55 months; From 1000th train to 2000th train, it took 8 and half months; From 2000th train to 3000th train, the figure was 5 and half months; From 3000th train to 4000th train, it’s 4 and half months; From 4000th train to 5000th train, it’s 3 and half months; When reaching 6000th train, it only took 2 and half months. The increasing speeds are showed in Fig. 2. It can been seen that the present CRexpress has gone into a rapid growth stage.

![Figure 2. Time Needed for Every 1000 Train Increase of CRexpress (M months).](image)

Through analyzing the operation situation of CRexpress in these years[11,12], it can be found that year of 2014 is an important pitch point. In this year, China Railway held first domestic
coordination conference of CRexpress at Chongqing on August 14th, 2014. From then on, CRexpress began to develop quickly. In the end of 2017, it has spread to more than 10 countries such as Kazakhstan, Russia, Belarus, Poland, Germany, France, Spain, Belgium and other European countries and many cities. Based on above, the year of 2014 may be as a cut-off point dividing the introductory stage and growth stage.

Table 1. Stage Features of CRexpress Life Cycle and the Goal of Product.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity of total CRexpress train</td>
<td>249</td>
<td>6300</td>
<td>Annual about 5000.</td>
</tr>
<tr>
<td></td>
<td>(110 from Jan.1st-Aug.13th, 2014)</td>
<td>(3271 in whole 2017)</td>
<td></td>
</tr>
<tr>
<td>Quantity of running line</td>
<td>6</td>
<td>57</td>
<td>Planning 43 hub nodes in main inland source areas of goods, main railway terminals, main coastal ports and land border ports, and building and developing 43 running lines. Operating point-to-point through CRexpress train and other train.</td>
</tr>
<tr>
<td>Quantity of domestic operation city</td>
<td>6</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Quantity of linking country and city in Europe</td>
<td>7 countries; / cities</td>
<td>13 countries; 36 cities</td>
<td></td>
</tr>
<tr>
<td>Running frequency</td>
<td>At irregular intervals</td>
<td>At regular intervals</td>
<td>Stabilizing the existing through CRexpress train and developing transit train.</td>
</tr>
<tr>
<td>Running direction</td>
<td>One-way of outward</td>
<td>Two-way for most lines.</td>
<td></td>
</tr>
<tr>
<td>Quantity of outward and inward CRexpress train</td>
<td>100% is outward CRexpress train occupy over 50% of outward one.</td>
<td>Inward CRexpress train</td>
<td>Quantity of inward CRexpress train rises obviously.</td>
</tr>
<tr>
<td>Running days</td>
<td>15</td>
<td>10-15</td>
<td>Shorten whole running time to reach about 1300km distance one day.</td>
</tr>
<tr>
<td>Transport price</td>
<td>Higher</td>
<td>Go down about 30%</td>
<td>A flexible pricing for the whole transport.</td>
</tr>
<tr>
<td>Supply condition of goods</td>
<td>Carriers have to ask for goods initiatively.</td>
<td>Customers must make a reservation ahead.</td>
<td></td>
</tr>
<tr>
<td>Goods category</td>
<td>Mobile, computer and etc. IT goods.</td>
<td>Add to garment, auto and parts, food, wine, coffee bean, furniture, chemicals, mechanical equipment and etc.</td>
<td>Enhancing cooperation to add more goods category.</td>
</tr>
</tbody>
</table>

Source of data: collecting and sorting from references [12, 13, 1].

Although CRexpress has a rapid development till now, there are a couple of problems need to normalize and improve. For this reason, CRexpress should be thought as still being at the growth stage. Besides, article [1] has come up with general requirements, spatial layout and main tasks to CRexpress from 2016 to 2020, which should be taken as the goal of CRexpress during the growth stage. Table 1 is a summarization to the stage features of CRexpress life cycle and the goal of product.

**Strategies of Improving CRexpress**

In order to keep or enlarge present market share of CRexpress. Based on present situation, planning goal and product life cycle theory, mainly from the angle of domestic source of goods and transport organization, below will probe into strategies of improving CRexpress.

**Further Deep Dividing Freight Market and Developing a Clear Orientation Based on Goods Category and Features**

Source of goods is the prerequisite of starting CRexpress. Different goods have different tolerance and sensitivity to transport time and transport price.
**IT Electronic Products.** This kind of products include mobile, laptop, hard disk, LCD and etc. It has a short update period of technology. Earlier entering the market, easier occupying the market in a higher price. It has great tolerance to transport price and high requirement to transport time.

**Fresh Goods.** This kind of goods include dairy products, flower, medicine and etc. It has a short life cycle of product. This means it must be sold in a short time. Otherwise, it would go bad, out-of-date or devalue. It has a higher requirement to transport time. In the meantime, it also request definite refrigeration technique and specific container type.

**Seasonal Goods.** This kind of goods include grain, garment, vegetable and fruit. It is produced or needed in some season, and need concentrate to transport in mass. So, being transported in a period or having definite time sensitivity are its features.

**General Goods.** This kind of goods include mechanical products, steel, household appliances, small commodity and etc. It often need a longer sales period. Since the sale price of itself is not so high, it is sensible to price. It has a higher transport price sensitivity and transport time tolerance.

The characteristic of railway transport product is with higher safety, moderate transport time and transport price. Those goods being higher additional value, massive transport volume and higher transport time requirement should be future stable source of goods for CRExpress. However, marine transport or air transport should be a better choice for those with a great sensitivity to transport price or strong transport time requirement. Thus, a clear orientation of goods category has been made. Then, a reasonable transport price and operation plan should be decided, which will become one of marketing strategy for CRExpress.

After determining the stable target source of goods of present stage, new goods market suitable for CRExpress should be paid attention. Furthermore, exploration to future products which perhaps will be put into the market in some day should also be made. This will be a preparation for future marketing.

**Improving Service Quality of CRExpress through Reasonable Transport Organization**

Although transport volume of CRExpress is increasing, the departure stations have different goods requirement transport volume on account of district difference. In order to transport their goods by a through train, some customers have to carry their goods a longer distance to the departure station through road. This will bring a waste of resource and diseconomy. Also, it will lead to lower utilization of cars if through trains are operated too many. So, besides keeping the existing through train, developing transit train is necessary. The operating quantity and scheme should be designed according to the demand.

In addition, CRExpress cars and containers should be timely deployed and supplied. Suitable type and enough quantity should be satisfied. In order to satisfy the requirement, containers may belong to carriers, clients or be rent. Transport information system and information transfer platform should be built and improved so as to trace the location of containers and goods and realize sharing resources from different departments.

**Other Aspects**

Changing the emphasis of sales promotion and making full use of the price means are also the strategies of this stage. In the aspect of advertising, the emphasis is to turn to build a better image from introducing the product. This will benefit to further lift social reputation of this product. In the aspect of transport price, certain discount may be given according to transport volume or be given to those stable customers. These strategies may rise the market share of CRExpress, and ensure the increase of long run profit.

**Conclusion**

According to product life cycle and the development of CRexpress, this paper conducts stage division and feature summarization. CRexpress is still being in growth stage. In this stage, deep dividing transport market, improving service quality, changing sales promotion key point and utilizing price mean to gain more market share should be present strategies of promoting domestic development of CRexpress.
References


[10] https://baike.baidu.com/item/%E4%B8%AD%E6%AC%A7%E7%8F%AD%E5%88%97

