

Researches on Logistics Cost Control of Enterprise under the Background of Open Economic Development

Ya BI

School of Logistics and Engineering Management, Hubei University of Economics, Wuhan, 430205, CHINA

Abstract: Modern logistics industry is an essential pillar of national economic development, but the high logistics cost, which restrains rapid evolution of logistics line, has been an obstacle to this industry, impeding the collaborative development of modern manufacturing and logistics industry. This article firstly introduce the current situation of China's modern logistics, analysis the significance of enterprise logistics cost, then, arrange and discuss existing researches on logistics cost, finally point out certain inadequacies, lay a theoretical basis for further researches.

Keywords: Modern Logistics; Enterprise Logistics Cost; Optimization of Logistics Cost; Logistics Cost Calculation and Assessment

1. Introduction

Modern logistics is the main component of enterprise procurement, production-manufacturing and distribution, being regarded as a ultima ratio of 21 century to reduce cost. Supported by information technology, modern logistics of developed countries has been an essential pillar industry, been a vital source to improve economic returns, and a key drive force for industry upgrading and enterprise reorganization as well as a key factor to facilitate regional innovation and economic development. Modern logistics will drastically change the pattern of current production and business, finally being a fundamental part of social economy as a systematic whole. It's world-widely acknowledged that the level of development is one of crucial symbols of a country's modernization level, overall national strength and attraction for direct investment, modern logistics has been an influential economic basis of developed countries[1]. On the one hand, modern logistics is the "third profit source" of enterprise and a vital guarantee to reduce business cost. Manufacturing and service industry mean manufacturing chain must extend at either end, namely, in order to overcome low value-added pressure, enterprise must plan to move to high value-added areas of industry. Modern logistics belongs to high value-added industry of service. On the other hand, modern logistics is the basis to indus-

trial shift and develop open economy. Fundamental transferred industries need large logistics, which in turn will promote rapid development. The evolution of modern logistics will facilitate the occurrence of logistics industrial cluster, strengthen regional competitive advantages to attract investment, drive regional manufacturing linkage development, give impetus to industrial upgrading and reorganization, provide strong basic facilities and supporting measures, become a new engine and accelerator to push forward economical taking off.

2. Enterprise Logistics Cost

Logistics cost means the currency performance of materialized labor and living labor consumption during logistics activities, it is a comprehensive value indicator to reflect enterprise logistics activities:

- (1) Logistics cost can truly reflect activity's actual situation;
- (2) Logistics cost can become the common standard to assess all activities. Therefore, logistics cost quantify the economic benefit index, can vividly present the economic returns of logistics system. Even though logistics exist only 30 years in China's development, it has remarkable recognition and relatively rapid development. We have assembled a variety of logistics metrics and China's GDP from 2007 to 2012, details followed by table 1:

Table 1. 2007-2012 China's GDP and total logistics amounts and cost statistics

Year	2007	2008	2009	2010	2011	2012
Total GDP amounts(billion yuan)	246 61.9	300 67.0	359.5	401 20.2	471 56.4	51932.2
GDP grow rate	11.9%	9.0%	9.1%	10.4%	9.2%	7.8%
Total logistics amounts of whole society(billion yuan)	752 30	899 00	966 50	1254 00	1584 00	177300
Total logistics amounts grow rate	26.2%	19.5%	7.4%	15.0%	12.3%	9.8%

Total logistics cost(billion yuan)	45 40.59	54 54.18	60 82.61	71 00.02	84 00	9400
Total logistics cost growth rate	18.2%	16.2	72%	16.7%	18.5%	11.4%
Divide total logistics cost by GDP	18.4%	18.1%	18.1%	17.8%	17.8%	18%

We can conclude these from the table:

(1) Total logistics amounts of whole society experience a rapid growth year after year, whose increment speed is far higher than GDP's growth in the same period, all of these indicate that China's logistics market and modern logistics industries have entered a rapid development stage.

(2) China's total logistics cost presents a dramatic growth, the share of total logistics amounts and GDP reasonably maintain at around 17-18%, higher than the share of whole society's total logistics amounts and GDP. Compared with logistics developed countries, such as America and Japan, this percentage is nearly double than it in that countries. Seeing from this statistics, our country has a low level of logistics intensive, in consequence, enterprise logistics cost nearly account for 32%-40% of products cost. However, in developed countries' logistics industries, the cost only account about 15%.

(3) Logistics demand flexibility rise year by year, economical increase gradually relies on logistics development. The relationship between economic development and logistics demand shows that, average logistics demand driven by per one hundred million yuan is 17.3 million yuan from 1991 to 2002, the average coefficient of logistics demand flexibility is 1.4. In recent ten years, average logistics demand driven by GDP per one hundred million yuan is 280 million yuan, the average coefficient of logistics demand flexibility is 2.18. This reflect that national economic grows 1 percent in China will promote total logistics amounts grow 2 percent. All these statistics watch a upward trend, reflecting the simultaneous development between logistics demand and economic development, it also illustrate that economic development more and more rely on logistics.

(4) Other statistics illustrate that the average gross profit of logistics industry has declined blow 10% from 30%(2002), logistics has been at meager profit stage. Recently, warehousing enterprises' profit rate only possess 3%-5%, transportation enterprise only 2%-3%,logistics enterprises' main business income rise 34.6% year on year, cost rise 39.6%, profit decline 8.6%.

3. The Way to Cut down Logistics Cost

Domestic and overseas scholars and appropriate government organizations launch a multi-perspective research on logistics cost control. Their findings can be attributed to two categories: one is the researches on preliminary issues such as cost classification, calculations and assessment of logistics cost control; another is the researches on key issues such as optimization, analysis, controlling and making decisions of logistics cost.

(1) Researches on preliminary issues such as cost classification, calculations and assessment of logistics cost control.

- Researches on logistics cost classification. Quite a number of researches aim at logistics cost calculation, sorting logistics cost from the perspective of payment form, operation ranges and function types; other researches may set transportation and warehousing as standards to classify logistics cost[2], this classification is appropriate to balance contrary relations of logistics function cost, which is either increase or decline; there are several researches classify logistics cost from the angle of logistics links, enterprise logistics cycles and logistics cost forming stages.

- , Researches on logistics cost calculation. With regard to how to calculate logistics cost, both Japanese and Chinese governmental departments establish calculation standards. Scholars carry out their researches from two main aspects: one is to utilize current accounting calculation system, reckon logistics cost by adding assistant account[3] ; another aspect is to make use of Activity Based Cost(ABC) or Time Drive Activity Based Cost (TDABC) to reckon logistics cost; there are still some scholars pose other calculation methods, for instance: using cost estimation of supply chain, gray theory and so on[4-5].

- ƒ Researches on logistics cost assessment. According to current findings, there are four categories to assess logistics cost: utilize traditional cost accounting methodologies to assess logistics cost; use the method of fuzzy evaluation to assess logistics cost; use engineering value theory to assess logistics costL use the CCR model of data envelopment analysis (DEA-CCR model) to assess logistics cost.

(2) Researches on optimization analysis and controlling decision of logistics cost.

- Optimization analysis of logistics cost. Scholars do some pilot studies on affecting logistics cost factors. Some scholars propose the actual driving reasons that affect enterprise logistics cost; some scholars use system dynamics, regression analysis measures, analysis how some factors influence logistics cost, which may include ordering structure, global logistics system uncertainty[6], inventory cycle rate and so on.

- , There are more researches on controlling and decision of logistics cost, but there are fragmented[7-8].To summer up, there are two dimensions: one is the methods for making decision. The ways for logistics cost decision can be attributed to three categories: the qualitative method , using Operation Research to structure the mathematics model, applying Computer Modeling and Simulation to

make decision; another dimension is the object of decision. The object of logistics cost decision can be attributed to three categories: decision-making regarding one kind or a part of logistics cost, regarding the total cost of logistics, regarding logistics cost and other cost of enterprise.

4. The Problem of Enterprise Logistics Cost Researches

The former experts have done much elaborate and valuable work, which include fundamental researches of logistics cost and optimization analysis as well as controlling decision. All these findings lay a solid and profound foundation for further researches. No one can deny the deficits of existing researches, which need further deep exploration:

On logistics cost classification

Current researches are either sacrifice to the need of logistics cost calculation or incomplete reveal the contrary relations of logistics cost. Logistics cost is the basis of logistics cost control, appropriate classification can reflect the contrary relations of logistics cost clearly and comprehensively, meet requirement of logistics cost analysis and decision, balance every kind of logistics cost for enterprises, and finally fulfill the lowest enterprise logistics cost, even the lowest enterprise total cost.

(2) Logistics cost calculation and assessment

Firstly, in logistics cost calculation, the TDABC is actually more feasible than ABC, but current researches that apply TDABC to logistics cost calculation exist following problems: neglect TDABC is only used to allocate indirect overhead, do not provide complete calculation steps and models of logistics cost; time equation is the key to TDABC, but current researches do not involve time equation which can be used to logistics cost. Secondly, in logistics cost assessment, traditional assessment, fuzzy evaluation method, engineering value theory as well as DEA-CCR model have their own problems respectively, as a result, it is urgent to search more reasonable methods for Logistics cost assessment. Thirdly, Logistics cost calculation is closely related to its assessment, the former provide material to the later, and the later in turn realize the role of the former in Logistics cost control. Thus, it is necessary to discuss the cooperation and convergence of these two aspect, even though there are little research findings exist.

(3) The optimization analysis and controlling decisions of Logistics cost

First of all, although many scholars have posed many factors that influence logistics cost, these factors are not comprehensive for lacking theoretical guide ; Secondly, current researches do not systematically analyze how these factors influence logistics cost or the paradoxical relationship between every kind of logistics cost; Thirdly, lack of specific research of the step, principles, data and

material in optimization and decision making, however, this kind of research is relatively important.

(4) The angle of optimization and controlling of logistics cost

Most of the current researches in optimizing the enterprise logistics cost are at the microscopic level, they are doing optimization analysis for one certain part or link of enterprise, but it has been proved that the whole situation can't be improved by the association of many partly optimize. Some rare researches working on optimizing and controlling of enterprise logistic cost are on a macro scale[9-10], while most of which are just doing qualitative analysis instead of quantitative analysis and identification, let alone the feasible optimize means.

5. Conclusion and Discussion

Logistic has already become the sunrise industry in China, but the continuously high logistic cost become an obstacle and thus decrease the profit brought by the fast modern logistic industry development. Not only can decreasing logistic cost bring efficiency and profit to company, but also inject vigor to the region economy. Per percent the logistic cost rises, society need to pay over 400billion Yuan. It is a bottleneck problem both theoretically and practically that the high logistic cost increases the cost of industrial transformation and restricts the speed of developing open economy. However, as a result of the imperfection of the system and the rareness of concerning research, we haven't had efficient means to decrease and control logistic cost, while there is still big development space for controlling logistic cost though it is really challenging.

References

- [1] Carlos F. Daganzo. Logistics Systems Analysis. 3rd Edition. New York. Springer. 1999.17-48.
- [2] Outi Manunen. An Activity-Based Costing Model for Logistics Operations of Manufacturers and Wholesalers[J]. International Journal of Logistics: Research and Applications. 2000. 3 (1). 53-65.
- [3] S. H. Ghodsypour, C. O. Brien. The Total Cost Of Logistics in Supplier Selection, Under Conditions of Multiple Sourcing, Multiple Criteria and Capacity Constraint [J]. International Journal of Production Economics. 2001(73). 15-17.
- [4] Carles Griful-Miquela. Activity-based Costing Method for Third-party Logistics Companies [J]. International Advances in Economic Research. 2001.7(1):133-146.
- [5] Binshan Lin, James Collins, Robert K.Su. Supply Chain Costing: An Activity-based Perspective[J]. International Journal of Physical Distribution & Logistics Management. 2001. 31 (9/10):702-713.
- [6] Pablo A. Mirand et al. Incorporating Inventory Control Decisions into a Strategic Distribution Network Design Model With Stochastic Demand [J]. Transportation Research Part E. 2004. 40 (3):183-207.
- [7] Drew Stapleton, Sanghamitra Pati, Erik Beach, Poomipak Julmanichoti. Activity-based Costing for Logistics and

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- Marketing [J]. Business Process Management Journal. 2004. 10(5): 584-597.
- [8] Thomas J. Goldsby, David J. Closs. Using Activity-based Costing to Reengineer the Reverse Logistics Channel [J]. International Journal of Physical Distribution & Logistics Management. 2000.30(6):500-514.
- [9] Amy Zeng, Christian Rossetti. Developing a Framework for Evaluating the Logistics Costs in Global Sourcing Processes [J]. International Journal of Physical Distribution & Logistics Management.2003. 33(9/10):785-803
- [10] Adil Baykaso gbreve lu , Vahit Kaplano gbreve lu. A Service-costing Framework for Logistics Companies and A Case Study [J]. Management Research News. 2007.30 (9): 621-633.