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Supply Chain Controllable Costs Management and Strategy Analysis

Hongfei Sun, Weixia Li, Qingsong Tang

School of Economics and Management Northeast Dianli University, Jilin, China

Sunny_bird@126.com

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Abstract. With the globalization of economic development, the competition between the enterprises becomes more intense. If you want to have a survival advantage in the fierce competition, you must find ways to achieve high efficiency and low cost strategy. But simply to raise revenue or simply to cut costs can't satisfy the requirement of enterprise survival and development. Therefore, to increase income and reduce cost, the combination of both, become the first background of enterprise development. The concept of supply chain cost management meets the requirement of this strategy. Diversity of the concept of supply chain, and constant adjustment along with the market determines the supply chain cost management is comprehensive and complicated system engineering.

Introduction

The development of the world economy has led to the current economic globalization, which is the inexorable trend of the development of on the road. From the GDP rising and the international division of labor to meticulous and fields, it is not difficult to see that the development of enterprises exist in more and more big obstacles. In the increasingly severe competition, enterprises adopt various methods for their survival and development. The advent of the digital age, it accelerated the social development and progress. The competition between the industries largely depends on the mastery of information. Information integration for enterprise cost control is far-reaching and obviously [1]. The global transnational enterprises and integration between organizations are described that the development of modern economy and technology has entered the development of supply chain cost management. In the competition between enterprises, the essence is the competition of supply chain cost control. So, in the face of complex and changeable market competition, if enterprises want to maintain competitive advantage, supply chain cost management is an important factor in the development of [2].

The Calculation Model of the Supply Chain Operation Cost

Calculation Steps. The basic calculation steps of calculation model of supply chain operation cost are mainly divided into 5 steps [3].

Analysis and Determine the Resources. Resource refers to support operation source of costs and expenses. It is the cost of the project for the production of various types of product or service cost within a certain period, or the price consumed during the execution of job. All the resources are confirmed, we set the repository for each type of resource, and the resource consumption will be collected to the corresponding repository in a certain accounting period.

Analysis and Determine the Homework. Homework is resource consuming activities that the enterprise for some particular purpose is the enterprise unit that divide control and management, is a bridge to link resources and cost objects. Logistics operation disperses in the enterprise organization structure and changes for different enterprise scale, technology and organization form. There are a variety of methods about job classification and identification. More commonly used is drawn enterprise operation flowchart and the various business processes of enterprises is shown in the form of a network in order to determine the operation department. A work flow chart describes the assignments in the enterprise and show how they connect with each other.

Determine Resources Motivation and Assign Resources Cost to the Job Cost Library. After confirmation of logistics operation, we set up a job cost library for each job. And then on the basis of resource drivers, we assign all the resources cost to each activity cost pools. Resource motivation refers to the resource how and why all operation be consumed. It is the basis that we assign the repository value to the operation cost library.

Determine Cost Drivers and Assign Operational Cost to the Cost Object. Cost drivers is refers to the logistics operation how and why all kinds of products or services be consumed. It is the standard that how to assign job cost library to cost object, and also is the mediation in the communication between work consumed and final output.

A supply chain cost system which based on the operation requires for how many the cost drivers at least, depending on the cost accounting accuracy of the results it achieves and the complexity of the supply chain. The diversity of supply chain services play a more nuanced and complex role in deciding whether two or more than two operations can be integrated and not in the case of using only one cost drivers cause error when the cost of further. In general, whether the use of a cost drivers is feasible or not, is determined by three factors:

A. The diversity of the logistics service.

B. The logistics operation of relative spending.

C. The number of diversity.

Calculate the Cost of Logistics Operation. Calculation of library supply chain operation cost is the operation costs collected by the cost pools according to cost drivers assigned to each cost object. When the operation cost of library operation cost assign in the cost calculation object, we should determine the cost driver distribution rate to calculate the cost of the supply chain job costing objects. Its distribution computation formula is as follows:

A. Cost drivers allocation rate = the operation cost happened in a job center t / the operation volume provided by the job center

B. The operation cost assigned by a cost calculation object = the number of cost drivers of the operation consumed by the cost calculation object * Cost drivers allocation rate

C. The cost calculation object of logistics operation cost = the sum of the operation costs assigned by the cost calculation object

Model Structure Design. Operation cost management method of the supply chain is build based on task management of logistics management and the operation cost management method (ABC) of management accounting, as shown in figure 1.

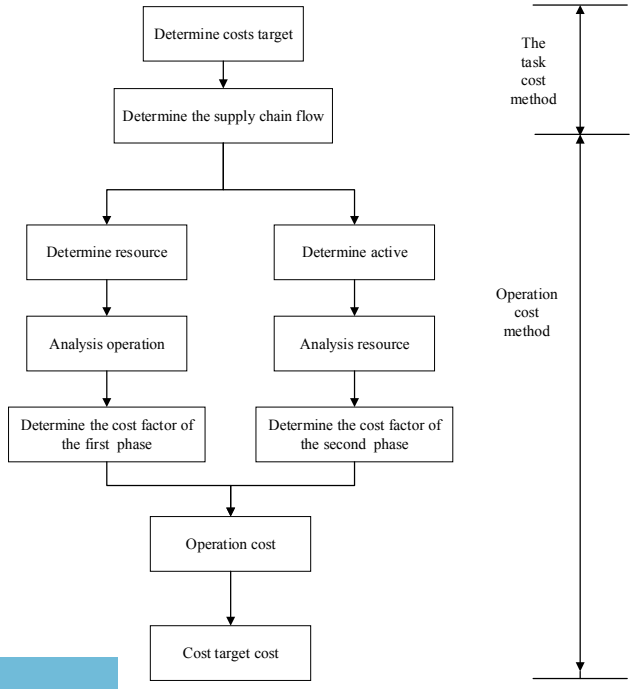

Fig. 1 Framework of Operation Cost Method Computation

The Empirical Analysis of Supply Chain Controllable Costs

This article on the background of a hydraulic excavator business, using the activity-based costing method to calculate and analyses of the enterprise supply chain cost.The enterprise is Sino-foreign joint venture enterprise about hydraulic excavator. The enterprise was founded in 1997. After nearly 10 years of development, the annual output value reached nearly 2 billion last year. The enterprise is a large-scale excavator manufacturing enterprise and a large enterprise which create tax revenues.

Calculate of Enterprise Supply Chain Cost. According to the steps described earlier, this paper use the relevant financial data of enterprise and production management data in June 2012 to calculate the enterprise's related logistics cost of the three types of excavator. When calculating logistics cost by using the homework cost method, the enterprise internal logistics links involved mainly include [5]:

A. Spare parts procurement. This month the enterprise purchase imported CKD parts has a total of 86 orders, and domestic components has total of 38 orders. All of them are 124 orders, including: B92 spare parts orders for 62, B93 spare parts orders for 49, B94 spare parts orders for 13.

B. Transport. As a result of enterprise outsourcing parts transportation and finished product, the related fees on the financial settle single subjects and this paper will not be considered.

C. Receiving inspection. The inspection process for all spare parts are exactly the same. Every time when the goods storage, inspection personnel are tested. This month, the enterprise's goods storage 113 batches. Among them: B92 parts for 56 batch, B93 spare parts orders for 45, B94 spare parts orders for 12.

D. Cargos hold. The enterprise's total amount of inventory parts of this month is 17.445 million Yuan, and the inventory of finished products (including: B92 for 59, B93 for 57, B94 for 14) amounted to 22.145 million Yuan. Both for a total of 39.59 million Yuan, at the same time, the commercial bank interest rate are 0.65%.

E. Storage management. This month, warehouse can provide storage management capabilities 1872 hours. Types of products which are used to handling time is proportional to the number of their production this month, respectively. The known number of various types of excavator production this month as follows: the B92 163, B93 135 and B94 for 11.

F. Handling. Warehouse can provide this month's handling ability 3328 hours. Types of products which are used to handling time are proportional to the number of their production this month, respectively. The known various types of excavator production quantity for this month: B92 163, B93 135 and B94 for 11.

G. Sales. This month, the enterprise deal with 216sales orders (here, an order contains only a digger), in which the number of each type of products are: B92 125, B93 79, and B94 for 12 sets.

Calculation Steps. Adopting activity-based costing calculation method to calculate the logistics costs of basic steps are as follows [5]:

Analysis and Determine the Resources. Through recognizing and measuring all kinds of resources value offered by firms, and we collect the resource cost value to the repository. This month, all kinds of resources value are provided by the enterprise as shown in Table 1.

Table 1 All Kinds of Resources Value Provided by the Enterprise Unit: Yuan

Resources Projects	Depreciation	Power	Fuel	Office Expense	Salary	Liquid assets
Resource value	102236.54	6490	5625	13296	67817.4	387335

Analysis and Determine the Homework. Figure 2 is the enterprise's logistics operation flow chart. It clearly describes how the purchase, inspection, receiving, accounting, storage, mechanism, and the preparation work going on and how they connect with each other. Can be seen from the diagram, the starting point of the system is the storehouse, it sent spare parts request form to the storage. If there are spare parts, we sent spare parts to mechanism operation; if not, we will issue the purchase request to purchasing activities. Purchasing activities to the supplier (end) issued a purchase order to send an attachment on the purchase order to accounting operations. Suppliers send spare

parts together with the purchase order to the inspection work. Quality assurance department to check the quality of the parts and specifications to provide the inspection report, warehouse operation began to inventory of goods, and the spare parts together with a receiving report sent to storage. If storage management personnel received the goods, the required spare parts immediately to the mechanism operation processing. At the same time, he sent report to the accounting job to receiving, and used as a payment credentials.

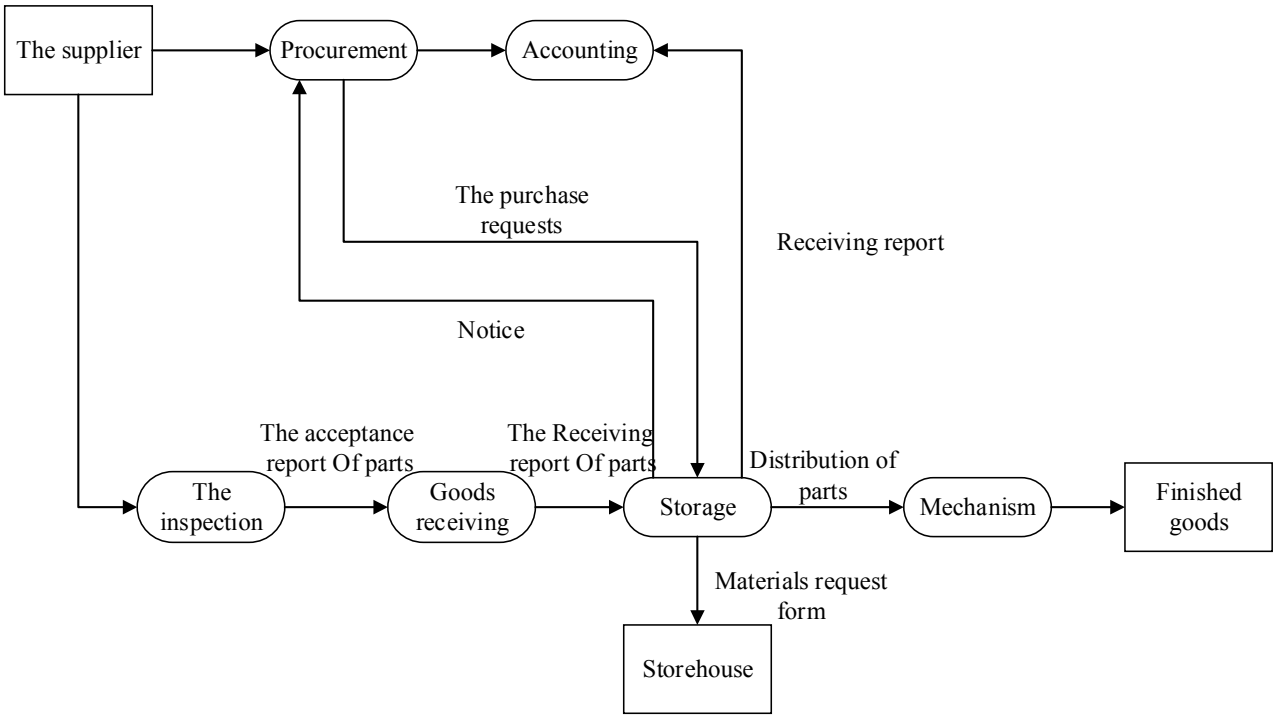

Fig. 2 Enterprise Supply Chain Operation Flow Chart

Resources Allocation to Each Activity Cost Pool. Here we need to make sure the resource drive of all resources. Each repository resources value should be assigned to each activity cost pool in the library.

A. Distribution of Depreciation and Office Expense. Depreciation expense occurs because of the operation using fixed assets. Therefore, depreciation expense can be allocated according to the fixed assets application of each activity. This application usually has a "monopoly", that is, certain fixed assets used by specific assignments. The office expense also has a "monopoly". Its distribution is approximately the same methods as the distribution of the depreciation cost. The allocation result is shown in Table 2.

Table 2 The Allocation of the Depreciation of Fixed Assets and Office Expense

Operation / Resource	Spare Parts Procurement	Receiving Inspection	Storage Management	Handling	Sales	General Management	Amount
Depreciation	11230.51	7241.33	23456.3	4189.5	12564	548.7	102236.54
Office Expense	3564	1255	2300	543	2896	2738	13296

B. Allocation of Electricity Resource Value. The reason of electricity resource consumption is "electricity use", whose amount can be measured by reading of electricity use. It is known that the price is 0.65 Yuan per kilowatt-hour. Specific allocation result is shown in table 3.

Table 3 The Allocation of Power Resources

Operation / Resource	Spare Parts Procurement	Receiving Inspection	Storage Management	Handling	Sales	General Management	Amount
KW	1465	1356	2890	1366	1695	1213	9985
RMB(Yuan)	952.3	881.4	1878.5	887.9	1101.8	188.4	690.3

C. Allocation of Fuel Resources Value. The reason of fuel resources consumption is "liter". It is known that the price of diesel per liter is 3 Yuan. The specific distribution result is shown in table 4.

Table 4 The Allocation of Fuel Resources

Operation / Resource	Spare Parts Procurement	Receiving Inspection	Storage Management	Handling	Sales	General Management	Amount
L	0	257	630	988	0	0	1875
RMB(Yuan)	0	771	1890	2964	0	0	5625

D. Allocation of Labor Charge. The reason of labor charge consumption is the number of staff and workers. Therefore, labor charge should be distributed according to the number of workers completing an assignment and wage level. The specific distribution result is shown in table 5.

Table 5 The Allocation of Salary Resources

Operation / Resource	Spare Parts Procurement	Receiving Inspection	Storage Management	Handling	Sales	General Manage-ment	Amount
The Mumber of Workers	4	3	9	168	4	7	43
Each Month's Salary	1524	1793	1345	1345	2214.35	1980	10201.35
Each Job's Salary	6069	5379	12105	12105	8857.4	13860	678174

E. Distribution of Current Assets. Current assets are specific to cargo holding operation. So we can entirely allocate the holding costs of liquid assets 257335 Yuan to cargo holding operation. Among them, the holding costs assigned to the spare parts inventory is 113392.5 Yuan, the holding costs assigned to the manufactured inventory is 143942.5 Yuan. Summarized result is shown in table 6.

Table 6 Allocation of Resources among the Various Jobs

Operation / Resource		Spare Parts Procurement	Receiving Inspection	Cargo Hold	Storage Management	Handling	Sales	General Management
Depreciation		11230.51	7341.33	0	23456.3	41895.7	12564	5748.7
Running Cost	Power	952.3	881.4	0	1878.5	887.9	1101.8	788.4
	Fuel	0	771	0	1890	2964	0	0
	Office Expense	3564	1255	0	2300	543	2896	2738
Salary		6096	5379	0	12105	21520	8857.4	13860
Liquid Assets		0	0	257335	0	0	0	0
Amount		21842.8	15627.7	257335	41629.8	67810.6	25419.2	23135.1

Determine the Operating Cost Drivers. The operation cost drivers of the enterprise, as shown in table 7.

Table 7 The Operating Cost Drivers

Operation	The operating cost drivers
Spare parts procurement	Number of purchase order processing
Receiving inspection	Number of cargo storage
Cargo hold	Number of excavator
Storage management	Working hours
Handling	Working hours
Sales	Number of sales order processing

Cost Drivers Allocation Rate. Cost drivers allocation rate, as shown in table 8.

Table 8 Cost drivers allocation rate

Operation	Spare Parts Procurement	Receiving Inspection	Cargo Hold	Storage Management	Handling	Sales
Operation Cost	21842.8	15627.7	14392.5	41629.8	67810.6	25419.2
Provide the Work	124	113	130	1872	3328	216
Distribution Rate of Operation Drivers	176.15	138.3	1107.25	22.24	20.38	117.68

The Actual Consumption of Resources Value for Each Type of Product. According to the relevant calculating results of the previous steps, we can calculate the consumption of resources value of three excavators (B92, B93, B94)."Inventory holding (spare parts)" and "general management" operation consumed by B92, B93, B94 (three kinds of excavator) can be assigned according to the proportion of the sum of consumed resources cost of all other operation of the three products to assign. The concrete calculation process is as follows [6]:

The sum of the other operation cost for B92 excavator:

$$21962 + 10921.3 + 7744.8 + 65327.8 + 35777.1 + 14710 = 156443 \text{ (RMB)}$$

The sum of the other operation cost for B93 excavator:

$$18190 + 8631.4 + 6223.5 + 63113.3 + 29632.5 + 9296.7 = 135087.4 \text{ (RMB)}$$

The sum of the other operation cost for B94 excavator:

$$2290 + 2415 + 1659.6 + 15501.5 + 15501.5 + 1412.2 = 24759.5 \text{ (RMB)}$$

And "stock holders (spare parts)" homework cost allocation rate:

$$113392.5 / (156443 + 135087.4 + 24759.5) = 0.36$$

"General management" homework cost allocation rate:

$$23135.1 / (56443 + 135087.4 + 24759.5) = 0.07$$

Summary

This paper studies the calculation method of the enterprise supply chain cost. From the Angle of homework cost accounting, we put forward the mathematical model to calculate the cost of enterprise supply chain, and make a practical analysis to this model. Under some decision-making circumstance of the enterprise logistics management, the supply chain cost calculation model that this paper puts

forward can provide more accurate cost information, give full play to the task cost calculation methods and advantages of the ABC cost calculation method.

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