Based Costing Management of Supply Chain Logistics Costs

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Abstract
In order to solve the problem of high logistic cost facing many enterprises, a supply chain logistic cost management is proposed, which is founded on activity-based costing. First of all, starting from the notion of supply chain management, the advanced cost management, as well as the theory of supply chain management, can be included into the logistic costing management process. It can clearly reflect the formation of cost, demonstrate the causation of resource consumption and cost, and realize the effective way to control costing by means of controlling activity-based costing.

Keywords: The Activity-Based Costing Method, Supply Chain, The Logistics Cost

1. Introduction
China's logistics management started not long ago. In 1979, China Economic Association went to Japan, attending the Third International Logistics Conference. The "logistics" concept for the first time is introduced to China. Today, because of fierce market competition, and continuously rising rice and rising labor costs, profit margins continue to decrease. It is difficult to gain profit by increasing the products' price. To lower production costs is also very difficult. Companies want to reduce costs and increase profits; therefore, logistics management has become the third source of profit [1] besides the means of production, labor. Supply chain logistics cost management props up when enterprises begin to focus on cost management in business, trying to maximize the profit; logistics cost management has made rapid development.

At present, China's logistics cost management development meets its bottleneck. it is difficult to compare it with the logistics management system in developed countries, the reasons are as follows:

1.1. Lack of management concepts
First, there is the weak concept of cost management. The understanding of logistics is limited to warehousing, transportation and other low value-added work; but some rationalization of logistics, logistics system design, development of information systems and high value-added work are lack of understanding; second, a modern logistics concept is not established, not fully aware that the key of the modern logistics management is to reduce production costs and enhance competitiveness; third, logistics is not considered as a priority to optimize the production process and market operation.

1.2. Low level of information
Much transmission of logistics information still use the "artificial errands" approach; there is no good connection among different sectors, so that the cost of logistics enterprises gradually increased.

In addition, China's logistics has problems, such as backward management, the high inventory costs, lack of logistics personnel, fuzzy cost accounting, poor transportation costs [2]. As now logistics industry is rapidly developing, there are a lot of problems. To use logistics and supply chain-based cost management will have an effective control over the logistic cost and increase benefits; therefore, it is essential to study and choose the proper way to optimize the logistic cost management.

2. Operating cost management
In 1988, Robert S. Kaplan and Robin Cooper investigated some U.S. companies, and they summarize the basic elements of the job cost accounting methods.
2.1. Theory of activity-based costing

Products consume activities; activities consume resources, resulting in cost. Operating costs go beyond the scope of products, rendering cost accounting into the operational level[3]. Activity-based costing work by selecting a variety of motives, to make an indirect cost allocation, so costs can be attributed to nature that can be improved, thereby increasing the accuracy of cost accounting information.

![Figure 1. works costing](image)

2.2. Characteristics of activity-based costing

Traditional cost management system is a simple operation, but often deviates from the actual cost of production, and reduces the cost of low-yielded products, so that decisions are biased. Especially in the modern production process, customized products are on the increase. Companies need to improve production technology, rich products' variety, shorten production cycle, in which way it can reduce costs.

2.2.1. Through work-based costing as an object, we then can take it as the foundation to complete the integration of additional costs

Operating costs has an identity of “work” in the consumption of resources and cost, serving as the two exchange channels. Consumption of resources is, according to the different motives of resources, allocated to the operations to generate operating costs. Operating costs are, according to different cost drivers, distributed for the final cost object. Work becomes the object of basic costs[4].

2.2.2. To emphasize the causation of cost fees

Costing, via work, serves as a contact between resources and products, using variety of cost drivers (such as work motivation, resources, motivation, cost drivers) as a template, forwarding the resources to work, and provide enterprises with cost information relatively perfect and pro-modern manufacture.

2.3. The core of activity-based costing

2.3.1. The target of operating cost method

(1). Supply chain logistics operations accounting for the cost of cost objects;
(2) Logistics and operations management through effective supply chain management to provide the required information and reason.

Figure 2. The target operating cost method

2.3.2. Activity-based costing management model

The core of operating cost management is to improve customer value. And obtain the value of benefits. Cost allocation in Figure 3, from resources to the job, and to cost object, is core to the operating cost management (process view) of the control system.

Figure 3. Activity-Based Costing Management Model

3. Application-specific operations cost management

3.1. The use of process operating cost method

3.1.1. Resource analysis and determination

Check resources consumed in supply chain logistics operations. Sometimes to combine some of the accounts and budget accounts builds a resource library. Sometimes to disintegrate the use of different accounts and budget accounts.

3.1.2. Analysis and determination of operations

Complete supply chain logistics operations in all aspects of the analysis for each of the logistics chain. Different sectors of logistics are classified into more simple basic operations, the operations cost and logistics operations as calculated assessment of the effect of operations premise. Completion of operations analysis in this stage describes the logistics supply chain in all the logistics activities.
3.1.3. The establishment of the resource work reservoir

Resource driver consumption of resources will be allocated to different operations, forming library operating costs.

3.1.4. Cost allocation

Operations of the job is motivated by the final cause and manner of product consumption, the consumption of resources to be allocated each library operating costs, and then begin the implementation of operations motivation, operations motivation is usually operations of a flow chart of output power operations. All operations costs of library operations dynamics are implemented in accordance with operations motivation, operations objects are different cost allocation cost.

3.2. The use of a key Operations cost

3.2.1. To specify the level of logistics operations

Work demonstrates all activities accomplished by the corporation, including time, the consumption of raw materials and other resources. The first is to make sure the hierarchy between the supply chain logistics Operations and some level of relationship. Operations level concept includes: job is step by step, a big Operations in a few small jobs, each small operation and have several smaller Operations, so continue the decomposition until the last broken down into staff and Operations machinery until each has a specific action.

Operating level

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Tasks -> Operation process -> Operation -> Process -> Operating
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<table>
<thead>
<tr>
<th>Handling</th>
<th>Use of the vehicle or fragmented way shipment</th>
<th>Cargo Handling</th>
<th>Container, unpacking, presentation and so on process activities</th>
<th>Operation of the specific task of the goods</th>
</tr>
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</table>

Practical operation example

Figure 4. Figure logistics operations level example

3.2.2. To determine the major cost categories

We can access the company's accounting records and information. According to the cost and volume of business, we divide the logistics costs into fixed costs, variable costs and mixed costs.

3.2.3. To determine the relationship between operations and costs

Operation of the logistics cost management accounts set up logistics operations, costs and processes are different, so we have to clear the job and the relationship between the cost of the project. In addition, attention should be paid for each job and the relationship with the other cost items.
3.2.4. Allocation among respective cost object

Logistics costing cost drivers to allocate resources according to cost, and cost targets of the process. It can be realized in two stages: first, the resource dynamics, the consumption of resources allocated to the job; the second, according to job motivation, the operating costs are allocated to cost objects.

General distribution of these phases is the use of indirect cost allocation, and indirect costs generally have management staff salaries, benefits costs, maintenance costs, depreciation and so on.

3.3 Attentions

The activity-based costing takes the indirect logistic cost as a subject when calculating the corporate logistic cost based on supply chain. The direct costing can be counted into the logistic cost, not involving the distribution of cost and calculation. When activity-based costing method is used, the following should be paid attention to.

The method is limited to corporate-run logistic cost. As for entrusted cost, it should be calculated respectively.

The logistic costing includes function cost, as well as inventory-related cost. There is a way to calculate according to national standard—inventory cost of holding fund = book value x corporate inner yield (or one-year bank loan rate)—figuring out the opportunity cost generated by the proportion of inventory taking up the holding fund, and which is reflected in terms of supply logistic, inner logistic and sales one. Therefore, the three sectors can be included into subject; as for those cannot be directed included, they can be defined by corresponding task and attributed to the final costing subject by choosing appropriate cause.

The implementation of this method demands the support from information system. Corporate sends the defined resources, cause, task, cost incentive and the subject into the information system control, meanwhile it shows the diversity of the above elements in order to promote the implementation via hard constraint from the information system.

4. The management of activity-based costing in supply chain of logistics costs

Supply chain is in the production and distribution processes, with products and services to end-user activity and the downstream enterprises of the chain structure. Supply chain management is the overall planning of the use of computer network technology, supply chain logistics, business flow, capital flow, information flow, etc.. We should take effective planning, organization, coordination and control tasks. Activity-based costing is a crucial method in the cost management system [5].

4.1. Operation Analysis

There are two objects of the corporate logistic cost management based on the supply chain: to optimize customers’ value via outer supply chain and to gain more profit via value provided by customers. Companies want to get their own profits, and provide more benefits to consumers. Its management requires in-depth level of the logistics operation to complete logistics operation analysis.

4.1.1. To analyze the link between jobs

Companies to complete operations management, operations and to implement the "operational chain" between the links between the various operations, "operational chain" value most basic needs, select a specific job [6]. Chain to be the ideal operation is to repeat the least number of operations and completion of the shortest. Analysis of the relationship between operation, is to achieve the established goals and designed a series of operation is not efficient and rational judgments, operating time, and repeat operation is not able to reduce to a minimum.

4.1.2. Analysis of significance
Typically, there are many logistics operations work on a variety of job-by-analysis is not necessary, is not consistent with cost-effective. Importance of management in accordance with the principle, only the important, the high cost of logistics operations cost analysis methods to the cost of operating costs based on the level of importance and to be ranked, ranking the previous work to focus on analysis, for example, in the transportation of logistics operations, warehousing, delivery, etc. to implement analysis. Complete job management purposes.

4.1.3. To establish benchmark

Value-added operations is not the best, most effective, and relatively advanced level of other enterprises, able to judge a company's operations and the effectiveness of the full value chain to look for optimization opportunities. Benchmarking allows managers to build fully understand the logistics of the operation process, what is the best way, where there are problems, how to do better, managing to avoid blind spots and improve logistics operations and performance.

4.2. Cost Driver Analysis

4.2.1. Dynamic Analysis of resources

It analyzes the activities consume resources, analysis, evaluation of the effectiveness of logistics operations for each mode. The validity of the job is the job of a reasonable consumption of resources, necessity. Logistics operation costs include operating cost data for analysis, there are operating costs, analysis of operations and resources to the project contact, have the necessary resources required to reset the resources, can reduce the resources that reduce the operating consumption solutions to reduce operating costs. Specific analysis of the situation include: reduced operating time and improve staff efficiency and equipment utilization, reduce the number of operations, the use of quality assurance, simple practices, equipment, tools and materials to reduce the cost and so on.

4.2.2. analysis of operation causation

It is not the same operations on the output of analysis results to assess the operational value-added approach. Operation of the logistics costs to bring operating cost data analysis to find the system's operating costs for each level of output. It aims o achieve value-added, reduced operations, the final implementation of the allocation of resources. Resource cause and activity driver analysis, value-added logistics operations and effectiveness of a clear understanding, all are to seek ways to reduce costs. For example, the job should be to reduce the time and resources to improve the efficiency of value-added operations, removing non-value added operations and selecting the lowest cost of operation, with the completion of resource sharing and job sharing, in aim that there is a reasonable allocation of resources [7].

Via the analysis of fund cause and task cause, we should have a clear understanding of effectiveness and appreciation of the logistic. We should seek ways to decrease the cost, such as decreasing the time and resources consumed by task, increasing the efficiency, reducing or even eliminating the redundant task. Besides, we can choose low-cost task to realize the sharing of resources and task and to rationalize the allocation of resources.

4.3. Reconstruction of Operation

Operation analysis and cost analysis and optimization-based reconstruction Operation. Companies do not add value by improving logistics Operation, improve the efficiency of value-added operations; and decomposition through the integration of Operation, business process improvement and other means to achieve efficiency, the purpose of reconstruction Operation. Reconstruction Operation that re-planning and design Operation level of production and business activities of each organization. The comparison of the processing of raw material before reconstruction and afterwards is as follows:
In addition to non-value-added operations, the necessary raw materials directly from the supplier will be able to, sent to the production line, the inspection and storage Operation can also be eliminated, thereby weakening the logistics of operating costs [5].

During task reconstruction and logistic improvement, we should pay attention to the comprehensive elements that increase cost. For instance, the reasons for delivery cost include delivery quantity and space occupation. Therefore, we need to look beneath the fact. Simplicity should be adhered to in the process. Usually, complexity will lead to extra cost. There are complicated factors, such as excessive suppliers, orders, plan changes, function and redundant accessories. For instance, HP Co. used to simplify it printer’s operation process via the task analysis and devised a printer with less components. In this way, HP company can reduce the suppliers’ number, the cost of components, tasks, storage and processing.

4.4. Operation optimization

To optimize the Operation aims to improve the quality of operations and to reduce operating time and operation costs. Generally have the following procedure: First, select the object to optimize Operation, focusing on the job with greater potential for the implementation of optimization; second, shorter cycle times, reduce operating costs, reduced Operation cycle depends on the operating procedures of coordination and improve operational efficiency to complete; third, to enhance the quality of operations and enhance the operational capacity of operators to enhance equipment maintenance, the implementation of equipment upgrades, build good corporate culture. Fourth, to enhance the concept of full optimization of Operation realizes the incentive to give full play the enthusiasm of staff to optimize Operation and improve all aspects of operational efficiency.
5. Conclusion

In recent years, study of logistic cost management in terms of supply chain has been gradually recognized. Typically, competition among enterprises were replaced by the competition between supply chains replaced; In addition, profits in the manufacturing will be fully developed, so that the potential for cost optimization can only be transferred into the area of logistics and be realized via supply chain management. This article, via views on activity-based costing in the supply chain analysis and optimization, proposes activity-based costing in logistics management in the practical application, highlighting the efficiency of business and process, forming tight supply chain and logistics service network system, in order that logistic resources and cost can be optimized effectively.

6. References