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Research on the cost control system of SQ corporation

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Research on the Cost Control System of SQ Corporation

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABASTRACT

Title of Dissertation: **Research on the Cost Control System of SQ Corporation**

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Abstract: As the sustainable development of national economic, and the increasing of living standard, the demand of car consumption expanding speedy in China. And that amazing consumption accelerates the growing of third party vehicle logistics. From the first, car logistics was regarded as the most complicated and professional field. At present, although Chinese logistics industry has gained some achievements, the huge distance with Europe and United States still exists. The management and technology of third party vehicle logistics are behindhand, most of them just have warehousing and transportation functions. Another shortage is the low control of cost management; it is the factor which hinders the development of third party vehicle logistics enterprises. The conventional costing methods allocate the cost according to the direct labor working-time or resource. But there is no evidence shows that the cost and these two factors. So, it means the traditional costing method could not provide accurate cost information for enterprises' managers.

In this essay, the writer tries to utilize the Activity Based Costing method in Chinese third party vehicle logistics enterprises. Take SQ Company as example, applies the ABC step by step; what's more, build ABC model and establish cost control system.

There are six chapters in the essay. The first chapter introduces the background and significance of the theme, stated the content and framework of the thesis. Chapter two reviewed former researches both aboard and in domestic. Also introduce the Activity Based Costing in detail, and give brief introduction of System Analysis Method. Chapter three, four and five are the main body of this essay. In chapter three, the

writer analyzes the present costing method of SQ Company, a third party finished-vehicle logistics enterprise in China. Besides, the writer explains the conventional method by a practical case. The ABC model of SQ Company was built in chapter four, the first model was based on the basic theory of ABC, and the second one was on the basis of activity's characteristics. According to the situation of SQ Company, the writer chooses the second model to calculate its activity cost. In chapter five, the writer establishes the whole cost control system for SQ company, compare the ideal standard cost to practical cost. Analyze the result, and give suggestion to SQ Company, help them to control and manage their cost better. Last but not least, sum up the whole paper in chapter six.

Key words: third party finished-vehicle logistics, cost accounting, Activity Based Costing, cost control system.

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LIST OF ABBREVIATIONS

ABC: Activity Based Costing

ACD: Activity Cost Driver

VSC: Vehicle Storage Center

Chapter I Introduction

1.1 Background and significance of the topic

With the rapid development of global economy and modern technology, logistics prospered in the world. Logistics industry is considered as the artery and foundation of the national economic in international. The degree of logistics becomes the indicator which could measures the modernity and national strength of a country. It is often likened to an accelerator of economic development. As the development of economic, the logistics industry also has advanced briskly, especially in vehicle logistics.

Owing to China's opening up to the outside world and economic development, the automobiles consumption has become popular and hot. In China, the productivity of cars exceed 2,240,000 in 2004; in 2005, the output of cars close to 3,000,000; the total productivity of automobiles in 2006 is 7,280,000, up 27.6% over the previous year, and the number of cars is 3,870.000; in 2007, there are 4,720,000 cars produced, and the capacity of automobiles is 8,880,000; in 2008, we produced more than 9,500,000 automobiles, about 5,000,000 are cars. As yet, the volume of domestic automobiles production is more than Germany, rank third only to U.S and Japan. Furthermore, China has become the second large market of automobile in the world, next to U.S. According to forecast of related specialists, the number of house-car will come up to 146,600,000 in 2010, run to 720,000,000 by 2020. The rapid development of automobile industry brings enormous growth space for Chinese vehicle logistics. But it is still behind Europe and United States.

Firstly, in Europe and United States, more than 80 percents car manufacture outsourcing their logistics function to third party logistics enterprises. They can responsible for the planning and maintenance of logistics system, transportation, warehousing, discharge, distribution and other services. But in China, most car manufactures transporting their products by themselves. Secondly, the statistical report indicates that the logistics cost accounts for 8 percent of sales, 10 to 15 percent of production cost in Europe and America; in Japan, it even could achieve 5 percent of sales. But in China, it is more than 15 percent of sales, about 20 percent of production cost. According to China Federation of Logistics & Purchasing, the demobilization ratio of vehicle transportation in China is 39 percent; the total transportation cost is three times than Europe and America.

What is the reason which restricts the development of third party vehicle logistics? The answer is high cost. The third party vehicle logistics is not mature by now, there are many problems need to be solving. The cost is too high to accept by vehicle producer and, lacking of cost control and management are urgent affairs. Most traditional costing method was based on quantity which suit for single variety but lot size products. However, as the species richer, the reduction of direct expense and batch, and the increase of indirect cost, the cost information received by traditional costing method was distorted, could not be take as the foundation of cost control or pricing. So, finding a new costing method is the most pressing matter of the moment, at the same time, it is the issue deserve to research.

1.2 Significance of the topic

The thesis makes systematical analysis of third party vehicle logistics, apply Activity Based Costing on cost management of third party vehicle logistics. Presents a thorough study of how to control the vehicle logistics cost by Activity Based Costing method. Propose an appropriate cost accounting method for third party vehicle

logistics. Besides, establish cost control system which on the basis of activities, test and verify the model by a case. Moreover, the writer analyzes the consequence of costing, explain the meaning of data information in detail.

By using Activity Based Costing method to control cost, third party logistics enterprises could calculate the logistics cost more accurate, provide useful data reference and support for decision maker; put emphasis on the consummation and resources consumption of each activity, so it is favorable for strengthen the cost consciousness; help manager to understand how, when and where did the expense incurred, thus carry on the efficacious control of logistics cost; ABC could divides the activities into non-value-added activities and value-added activities, it is conducive to improve the planning of logistics service and business process reengineering, promote competitiveness of enterprises; last but not least, to make use of Activity Based Costing method, Chinese third party vehicle logistics enterprises could integrate with the international logistics corporations.

1.3 Content and framework of the thesis

The thesis focuses on the implication of Activity Based Costing in SQ Corporation, a third party finished-vehicle logistics enterprises. To achieve this purpose, the writer first presents the situation of vehicle third party logistics, and introduces the traditional costing method of them. Besides, makes a detailed description about Activity Based Costing method, including the origin and development of ABC, and how does ABC method used in logistics enterprises. Then, the writer introduces the traditional costing method of SQ Corporation, and applies it on a specific case. Afterwards, builds costing model of SQ Company which based on the ABC method, and also use it in a real case. Moreover, establishes cost control system according to the costing model for SQ Company. Last, summarizes the whole thesis, gives recommendation for SQ Corporation.

Chapter II Literature Review

2.1 The Third Party Logistics and Their Cost Management

Logistics is an objective fact which existing with human production activities, but the relative concept of logistics was emerged from the beginning of last century, study it as a subject is a phenomenon in these latter decades. Recognize logistics in theory originated from 1901, John F. Crowell first discourse the logistics of agricultural products in a U.S. government report. It marks the prelude to the follow research on logistics.

Lomas (1997) defined the third-party logistics provider as "a firm that provides outsourced or third party logistics services to companies for part, or sometimes all of their supply chain management function". "Third-party logistics involves the utilization of external organizations to execute logistics activities that have traditionally been performed within an organization itself" (Baziotopoulos, 2008).

In early 1980s, China innovated the concept of logistics from Japan, the tide of the logistic industry is rising along with the development of rapid economy. During the process, it's beginning from straightforward imitation, and after self-renovation, logistics makes contributions to cost saving. Since the rapid growth of logistics industry, the research of logistics is moving to a climax. Dong Qianli (2000) study on the theory and practice of third party logistics, he believe that the conditions are ripe for China develop third party logistics. Tian Yu and Gong Guohua (2000) discuss whether the enterprises should outsource their logistics function. They suggested that make choice according to three aspects: the strategic importance of logistics sub-system in the company, the strategic significance of single logistics function,

compares the cost of self-running with outsourcing. Yu Jiang (2003) analyzes the reason of more and more company outsourcing their logistics function, explore the key factor of outsourcing and how did enterprises manage the relationship with Third Party Logistics Company.

In March, 1976, Japan issued "The Uniform Standards of Logistics Costing". The document set logistics costing as three different standards. The first standard divides logistics cost by payment forms: freight, storage expense, packing expense, internal transport cost, payments of labors, management cost and interest. By this method, manager could know the total cost and which object cost most, and it is efficient to decide key point in cost control. The second way was decided by logistics function, there are package, distribution, warehousing, cargo handling, information and management in second type. Through this method, people can found that which function cost more capital, and then, rationalize it. Besides, it can calculate standard logistics cost, manage activities, set the reasonable target. Next one was depended on applicable object, it showed that the cost distribution ratio of each objects. For instance, the company can take product, area, customer or business entity as objects. If take customers as object, the logistics company could provide different service to different customers based on their costs.

Xu Guangyi and Zhao Jiwei (2003) showed how to balance the trade-off between logistics service and cost. Cheng Rongyao and Yan Baojie (2003) proposed the principle of logistics cost calculation, explain the steps of calculation on the basis of cost formation mechanism; introduce the different ways to count the logistics cost; analyze the distinctiveness and significance of logistics cost calculation, put emphasis on logistics cost management.

Gao Jianbing and Huang Yan (2000) focus on the control of logistics cost, he recommend logistics enterprises pay more attention on systematization and combination control, and let computer network system go to work as much as possible.

The research of Activity Based Costing method in China, keeps pace with the developed countries.

2.2 Activity Based Costing

2.2.1 The origin and development of ABC

James. A. Brimson wrote "Activity Accounting: Activity Based Costing" in 1991, describe Activity Based Costing method from the view of accounting. Introduce the concept, theory, features and functions of ABC. "Activity Based Costing (ABC) is a costing model that identifies activities in an organization and assigns the cost of each activity resource to all products and services according to the actual consumption by each one; it assigns more indirect costs into direct costs"[1]. ABC centers on activity, tracking and reflect all the activities' behavior by confirm and measure activity cost. It could provide useful information to eliminate non-value-added activities and improve value-added activities. ABC model prompt the manager to minimize loss and waste, enhance the scientificity and validity of decision making, planning and controlling of enterprise.

Follow the definition above stated, we know the three key point of ABC: first, ABC is one of the cost accounting method, it is placed under the division of cost-management accounting. Second, the principle of ABC is "costs consumed by activities, activities consumed by products" (Narayan Sethuramon, 2002). Third, the definition exposed the core and objective of ABC, control the cost by activities.

Bussey (1993) analyze the factor which favor the growing of Activity Based Costing. Important factors are: the increase of fixed and the decrease of direct labor cost, societies highly developed especially in technology or industry, product

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[1] http://en.wikipedia.org/wiki/Activity_based_costing

diversification, fierce competition in every walk of life and deregulation. He underline that conventional costing method could not provide refined cost information, it is the common problem of manufacturing and service industry.

Because of economic and technologies grew in leaps and bounds, the proportion of direct cost and manufacturing expenses were changed. As a result, the traditional cost calculation method, which shared the manufacturing cost according to the quantity of production, distorted the actual product cost severely. In order to solve this problem, American scholar Robin Cooper and Robert Kaplan (1988) proponent of the Balanced Scorecard, put forward a cost calculation method which ground on the activities--Activity Based Costing. They described ABC as "an approach to solve the problems of traditional cost management systems". Those traditional costing method are unable to determine the accurate cost of production or services. As a result, managers were often making wrong decisions since the tortured data. Activity Based Costing has professional definition until 1987, Robert S. Kaplan and W. Bruns introduced ABC in their book "Accounting and Management: A Field Study Perspective". And then, numerous American universities, accountants and enterprises associated with each other, carry out research in this field. The representative works are as follow.

Joon Jong No and Brian H.Kleiner (1997) discussed the weakness of traditional costing method. They point out that conventional method could not adjust to product diversification and computer-integrated manufacturing, it can report seriously distorted product costs. Using ABC method, multi-product manufacturers could improve their efficiency; grasp the cost of each product exactly. Besides, they construct ABC system design and implementation. The design of an ABC system consists of five steps: aggregate actions into activities; report the cost of activities; identify activity centers; select first-stage cost drivers; and select second-stage cost drivers. The seven stages in the ABC system implementation are: an ABC seminar; a design seminar; design and data gathering; progress meetings; an executive seminar;

result meetings; and interpretation meetings[2].

2.2.2 The basic theory of ABC

Generally speaking, there are four key factors of ABC: activity, resource, cost object and cost driver. They are the basic and essential elements of Activity Based Costing method.

2.2.2.1 Activity

Activity is the core of ABC. "Activity means the internal movement which consume resource for some purpose, it serve as a bridge between the resource and product cost" (Cooper, 1993). Activities are interrelated in the whole process, and they are independent at the same time. As independent factors, they are the units which differentiate control and management. And when related activities colleted together, it is activity center.

According to Cooper and Kaplan (1991), the fundamental features of activity are as follow. First, activity is the process that from the input of resources to the output. Second, activities run through the whole process of product and operate. The product was completed by activities from design to sell. Besides, marketing also can not implement without activities. Last but not least, activities are measured by the measurement standard. This is the most important feature of activity.

Cooper and Kaplan (1991) stated that activities are classified by its characteristic, generally speaking, there are four kinds. The first one is unit-level activities; unit-level activities are aimed at the productivity or service of unit product. The

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[2] http://www.valuebasedmanagement.net/methods_abc.html

resources consumed by unit-level activities are proportional to the productivity or service of products; in other words, the resources consumed by unit-level activities are proportional to the direct labor hours or machine hour. The second kind is batch-level activities, they are the activities benefits a batch product, has no relation with the units of each batch. Next one is product-sustaining activities, which are conducive to a species of product. Product-sustaining activities have no reference to the quantity or batches of product, but they are proportional to the type of product. The last kind is facility-sustaining activities, it refers to the activities which made the enterprise operates properly. Besides, they have no concern with the type, batch or quantity of product. Usually, these activities are good for an institution or a department[3].

2.2.2.2 Resource

Resource is the source of cost; it is the original form of cost. If we regard enterprises as an input-output operation system, that exchange substance with the outside world; so all the factors within this system belong to the resources, including man power resource, physical resources and financial resources. Therefore, scholars divide resources into currency resource, material resource, human resources and power resource (James Brimson, 1991).

The main sources of resources' cost is general ledger, it could provide information about wage, depreciation, and tax. Account already existed in traditional cost accounting, such as manufacturing expenses, direct material and direct labor. In ABC system, resource account is not only a way of systematization, but also the main subject of distribution. The manufacturing cost was assigned in line with working hours, and the account of actual manufacturing cost took part in assignment direct. This mode was lead to the distortion of information, and more resources in account,

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[3] http://www.emblemsvag.com/abc.htm

the distortion were more serious. ABC method establishes a multiplicity of resource accounts which has hierarchical structure, and improves the accuracy of cost distribution by means of account segmentation[4].

2.2.2.3 Cost Object

"A cost object is a tangible input for a product manufactured/Service provided, like labor or material" (Wikipedia). It is the object which corporation wants to measure costs; it is fixed according to the needs of corporation. For example, corporation could regard production batch as cost object, as well as each type of commodity. Besides, if the company applies "Customer Portfolio Management" to define the target customers , each customer's profit is the key indicator; in that case, every customer is the cost object. On the whole, cost object is the finally object of computation and allocation, it can be product, service and customer etc. Based on the cost accumulation and assignment of various cost objects, the firm will get different data information which could provide diverse foundation for decision making or analysis.

2.2.2.4 Cost Driver

Cost Driver is the core of ABC theory. Generally speaking, a cost driver is "any activity that causes a cost to be incurred"[5]. It is the cause of cost assignment; meanwhile, it is the intervening factor between cost object, directly related activities and resources. It is important to note that the relationship between active and cost driver is not only one-to-one mapping, but also one to multi mapping.

In choosing cost drivers, the principal idea is that the drivers must reflect the cause-and-effect relationship. For instance, the company want to calculate the cost of

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[4] http://www.manaren.com/news/1010017102/
[5] http://en.wikipedia.org/wiki/Cost_driver

receive orders. In this case, the purchasing orders cause the costs of the activity, and the number of orders is the cost driver.

According to Shank and Govindarajan (1993), there are two main types of cost driver: Structural Cost Drivers and Executional Cost Drivers. Structural cost drivers that are derived from the business strategic choices about its underlying economic structure, such as scale and scope of operations, complexity of products, use of technology. Executional cost drivers that are derived from the execution of the business activities such as capacity utilization, plant layout, and work-force involvement.

But most scholars thought that the cost drivers should divided into two catalogues: Resource Driver and Activity Cost Driver. Resource Driver means the way and the cause of activity consumes resource, it can reflect the causative connection between the amount of activities and resources consumption. For example, the production quality test needs inspectors, special equipment and consume certain energy, such as electricity. So, test activity is cost object, and the resources it consumed are the cost of test. But the cost of energy could not calculate straightly, accountant should allocate the cost based on the power rating and running time of equipments. In more specific terms, the power rating times the running time equals resource driver of energy cost. Activity Cost Driver (ACD) is the standard that distributes the cost of activity center to cost object. Activity Cost Driver has a connection with activity classification. If it is unit-level activities, the ACD is volume of production; on condition that batch-level activities, ACD are the batches of manufactures; and supposing it is product-sustaining activities, the number of varieties of products is ACD.

2.2.3 Application of ABC method in Logistics Enterprises

Antons (1992) said that, most manufacturing enterprises use similar method to

manage their internal activities, but in service industry, each business has different activities from others. For instance, insurance, bank and medical services have total different activities inside. This may be is the reason that the service industries adopt ABC system later than manufacturing, but he believes that ABC could apply on each service industry.

Cooper and Kaplan (1991) analyze the necessity of apply ABC on service industry. On the one hand, deregulation brought freedom for finance, medical care, transportation and communication. The service industry are more autonomous to design new product or service, pricing own product or service. At the same time, the competitors in a industry grow in number. Only the company which has fully understands on market, customer and itself can survive. On the other hand, the costs of marketing, research and development, customer service have higher and higher ratio of total cost. But the former costing systems focus on direct material, labor and manufacturing expenses, can not handle the new situation. Cooper and Kaplan believe that ABC system could apply on logistics enterprises. First, the proportion of indirect cost was higher than direct cost in logistics. During the process of logistics service, most costs belong to indirect cost. The direct costs such as labor and materials sharp decreased owing to the increasing technology and productivity. Activity Based Costing is aim at the enterprises which have high ratio of manufacturing expenses or indirect cost. Next, Logistics Corporation has strict demand on customerized service. Logistics Company provides intangible service for customers, and each customer have individual requirement about his or her service. It is complicated for Logistics Company manages these requirement. ABC method specialize in the problem that product diversified and production model varied frequently. Last, ABC could assist enterprises with logistics cost management, such as pricing, customer profitability analysis and logistics process improvement.

American Institute of Management Accountants issued "Logistics Cost Management". The proclamations intended to improve identification, measurement and management

of logistics cost. It described comprehensive logistics which appropriate for supply chain logistics' cost management. The report offer a systematic thought to cost accounting system of logistics, and defines the typical logistics activities as follow: procurement, transportation, warehousing, material, inventory management, customer service, order processing, forecasting, production planning, information system and support activities. In the meanwhile, the article described "ABC application in logistics" in detail, including the theory and seven stages of ABC. Finally, the essay take a logistics company as example, accounting its logistics cost and activity cost by Activity Based Costing, then compare activity cost with traditional cost.

In Japan, logistics cost management is highly appreciated. Professor Tang Zefeng (1982) of Kanagawa University stated that, there are four phases in logistics cost management: understand the real situation of logistics cost, purchase budget management, set benchmark or standard value, and integrated with accounting system. At that time, Japanese endured as third stages.

In 1996, American Productivity & Quality Center (APQC) intensive research into the performance of Activity Based Costing Management (ABCM). Many scholars set up a group to look into the 750 logistics enterprises, focus on how managers took advantage of Activity Based Costing Management. The scholars summarize three pieces of information from the surveys: first, more than 60 percent managers have experience of using activity based costing management information to make decision, and the production managers use it most frequently. Twenty percent production managers believe that they must consider cost information when make production decision. Obviously, ABCM information is not only adequate for cost accounting and external reporting, but also for output decision and administration. Secondly, more than half logistics enterprises agree that ABCM information could help them to make better decisions. In addition, most logistics firms willing to cut down the cost through improve activity planning, and reacted well to its effects. This is the unique channel to reduce the cost, which different from orthodox cost management. Third, over 26

percent managers thought that the utilization of ABCM was a tremendous success. The chief operating officers of ABCM satisfied with it most, 52.3% of them consider it as "an extremely success" or "a great success". And 40.4% upper-level managers choose "an extremely success" or "a great success". The statistical data shows that the logistics enterprises pleased with ABCM, it is well received by managers. Apart from three information, the investigation reflect several phenomenon of logistics companies which use ABCM: first, the firm which has high ratio of activities is willing to apply ABCM than others; secondly, the activities more complicated, the enterprises enjoyed more benefits from ABCM; next, the complexity of competitive environment is proportional to the complexity of cost accounting system; moreover, the greater companies utilize more ABCM system than smaller ones; last, if the corporation has high production technical level, it were use ABCM more likely[6].

Professor Osamu Nishizawa (1993) makes an intensive study of logistics cost management, and discussed the theory of Activity Based Costing. He was the first person who propounding "The Physical Distribution Iceberg Theory". He believed that the huge logistics costs were hidden; it is "the third profit source". He also realized that ABC method can change the structure of logistics cost, logistics industry could pricing according to ABC. Through ABC theory, Logistics Company can decrease their transport cost, warehousing cost. Later, he explained how to pricing freight and warehousing fee, decide cost budget and improve logistics efficiency by ABC method.

In China, the research on this issue is start almost at the same time as in United States, Europe and Japan. In the early 1990s, a project group began to research on ABC theory, and published a series of analytical papers. All of these scholars carry out an active and extensive research on the theory and practice significances of ABC. Furthermore, they analyze the performance and weakness of ABC application, and forecasting the application prospect of it. Each article analyzes the theory, dominancy

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[6] http://www.yn56.com/zhuanti/1114/1114.asp

and implement of ABC from different perspectives.

However, only few articles using ABC method in logistics enterprises. Regarding the cost determination, planning, control and performance evaluation, domestic research is only limited to the introduction of foreign research results. There are less literary works about logistics cost accounting and control, but some of them real mentioned that apply ABC on logistics enterprises.

Zhou Jie (2005) expatiate the necessity of implement Activity Based Cost Management in logistics. She said that ABC provided important cost information for Logistics Company; meanwhile, it introduced the concept of activity management to logistics management. Furthermore, ABC method could offer non-financial information through the analysis of product, value chain, activity and resources. These information are important to improve logistics management, also speeding the development of logistics.

Meng Dawei, Pei Jianwei, Chen Bochang and Sun Haitao (2003) compared the differences between conventional costing process and Activity Based Costing process in their article "Application of Activity-Based Cost Method in Logistics System". They took the distribution system of Coca Cola for example, calculate the distribution cost before and after the establishment of distribution center on the basis of Activity Based Costing. According to the result, the manager could decide whether build the distribution center in somewhere.

Fang Yun and Yang Mei (2005) give a brief introduction of ABC method in "Application of Activity-Based Costing in Logistics Enterprise", described procedure of implicating ABC in logistics industry. In Xiong Jinan's (2002) essay, "Activity cost control for third party logistics", he analyze the operation process and activity cost of third party logistics in the light of Value chain and Cost-Benefit balance theory. He suggested that activity cost control should comply with the integration of supply chain.

The logistics group can not ignore following sections: logistics process reengineering, effective cost accounting, integration of logistics departments, rationalize the activities, logistics information and so on.

In "The Research on Controlling Model of Logistics Enterprise Cost", Cui Hong (2003) embarked on freight forwarding business, built an activity flow card model. This model could control the whole process of logistics, from budget management to customer's feedback. Cui Hong stated three advantages of activity flow card model: first, it can eliminate blind spots of cost control; next, quantitative cost analysis made the investment plan more reasonable and valid; last but not least, the appearance of abnormal cost exposed the potential quality problems among logistics activities.

Chapter III Traditional costing management of SQ Company

3.1 The generality of SQ Company

SQ Company was an automotive logistics company which established in 19997, it was the subsidiary company of SA Group Corporation. SA Group Corporation located in Xi'an City, Shaanxi Province, it was the largest automobile manufactory in the northwest part of China. By adopting social capitals in a broad way, both scale and production capability of SA Corporation have increased rapidly and reach an annual product output of 30,000 heavy-duty automobiles, 20,000 medium lorries, 1,500 buses (including its chassis) and 50,000 heavy-duty truck axles. In addition, the annual production of its radiator, oil tank and other auto parts achieve 500,000,000 RMB production value. Moreover, SA Corporation has the authority of import and export. Their products have exported to more than 30 countries and region such as Asia, Europe, America, Oceania and Africa.

Facing the challenge of globalization economic, SA Corporation realizes that they should do logistics by themselves for more control and better service. So the SQ Company was established in 1997, which is focus on finished-vehicle logistics，and also offer services such as forwarding the goods by air, sea and land, booking space, warehousing, customs clearance, transshipment, less than container load (LCL), insurance etc. In addition, SQ Company has built three vehicle storage centers (VSC) in Chongqing, Ji'nan and Zhangjiakou. These VSC improved the service quality of SQ Company in a large extent.

Now, SQ Company was the biggest carrier of Qingchuan Automobile Corporation, BYD Auto Corporation, Eurostar Automobile Corporation and SA Group Corporation,

all of these automobile manufacturers are situated in Shaanxi Province. At the same time, it undertakes the logistics of Shaanxi Hanzhong Bus Corporation, SUZUKI Auto Corporation, Great Wall Motor, and Geely Holding Group, as well as warehousing and storage.

3.2 The traditional costing method of SQ Company

3.2.1 Introduction of traditional costing method of SQ

In the past, SQ Company applied traditional accounting method to calculate its cost. The traditional costing method based on the accounting information of company; then collecting, processing and organizing the data of logistics cost, and summarized the result; at last, arrive at the conclusion of total logistics costs in an accounting year.

For SQ Company, the traditional costing method could retrieve logistics cost information without any adjustment or a new statistics of current financial statement. It is a convenient and simple way, but of course, it has certain disadvantages at the same time. First, the data information which got from Accounting Information System (AIS) only provided few cost information, the major one was the external logistics payment in cash. Due to the separation of internal activities, the cost of some logistics activity just have incomplete records, could not be control and calculate accurately. So, there is no actual initial data for logistics cost accounting. Second, company only knows logistics cost belong to which accounting subject, but it can not traced back to the logistics activity that incurred the cost. And even if the company would get the information about the logistics cost, it can not analyze the problems which happened during the logistics activity.

3.2.2 A traditional costing case of SQ Company

3.2.2.1 Case description

SQ Company got three logistics contracts in May, 20003. The first one was transport 100 MAN series cars from Xi'an to Chongqing. Another one was distribute 150 FLYER cars from Xi'an to Guiyang. The last one was transport 210 SHZ mini buses form Xi'an to Shanghai. Each contract should be completing within a month. So, SQ Company decide to use A101 car transporter, which can load 8 MAN or FLYER cars at a time, for contract one and two; and transport SHZ buses by B310 car transporter, which can load 6 buses every time.

SQ Company has a warehouse which covers 12,000 square meter, and all the cars and buses were distribute from manufacture to the warehouse firstly, then transport to the destination in batches.

3.2.2.2 Cost calculation

And from the finance statement of SQ Company, we could get such information about these contracts as table 3.1.

Table 3. 1 The traditional finance statement about three contracts
（Note: The unit of cash is RMB）

Contracts Items	MAN series	FLYER	SHZ	Notes
Quantity	100	150	230	

Round-trip Distance (kilometer)	1580	2506	3018	
Fuel Consumption (L/km)	0.32	0.32	0.38	According to the former records
Fuel Price (RMB/L)	4.6	4.6	4.6	The diesel price in May, 2003
Number of Driver	3	5	8	
Salary of Each Driver (RMB/month)	1800	1800	1800	
Toll Charge	1600	2600	3500	
Repair Bill			520	
Transportation Times	13	19	29	

(Source: SQ Company)

Now, we can calculate the total logistics cost of each contract.

For the contract of MAN series, the total logistics cost = 1580*0.32*4.6*13+3*1800+1600*13=59,034.88 RMB， the cost of each car = 59,634.88/100=590.35 RMB.

For the contract of FLYER, the total logistics cost =2506*0.32*4.6*19+5*1800+2600*19=128,487.808 RMB, the cost of each FLYER = 128,487.808/150=856.59 RMB.

In the last contract, the total logistics cost = 3018*0.38*4.6*29+8*1800+3500*29+520=209,408.456 RMB, the cost of each SHZ buses = 209,408.456/230= 910.47 RMB.

3.3 The problems of traditional costing method

In the last section, the costs of three contracts were calculated easily, but it is one-sided and inaccurate. In more specific terms, the cost which calculated by traditional method just reflect the direct logistics costs of these contract. Other costs such as operating cost of SQ Company, insurance premium of transport vehicles, the rent of warehouse, the cost of information system, the charge for depreciation of fixed assets and so on, all of these costs are not be included. So, if the company accounts their cost as this way, it is much lower than actually, SQ Company could get loss. Besides, the manger will make wrong decision according to this imprecise information.

The traditional costing method takes transportation service as objective, accumulated cost by process-costing system or job order costing system. Both costing method were based on the quantity, appropriate for the products which have few kinds but great amount, big direct cost but little indirect charge. In recent years, SQ Company introduced modern information system, improved the efficiency of transportation and distribution service to deal with the increasingly competitive market. Now SQ Company could provide service for many supplier, retailer and client at the same time. This advantages diversified the products, decreased the batches of product, reduced the direct labor and material cost. Accordingly, the indirect operating cost such as facilities consumption cost and cargo handling charges are continuously rising.

In such a situation, the structure of logistics cost was radically changed, the old costing method is out of date because it can not distribute the indirect operating cost properly, while it was fail to meet company's need about cost calculation and control. These old costing methods cause sever big disadvantages of costing system: first of all, the distortion of accounting information, because they can not

assigned indirect cost in correct way. Second, traditional method based on the traditional accounting subjects, which lack of individual logistics items, such as the cost of return. It is difficult to calculate and analyze the logistics cost clear and comprehensive, usually it were induce indistinct and underestimate. Third, in general, the traditional costing method counting the total logistics cost only according to the recorded activities involved, not the independent record of a particular contract. So, the decision maker can not manage the cost of a special product or contract. Next, the integration of logistics needs a cost-benefit analysis system, which can assign the total costs to logistics activities. But the traditional methods mixed the logistics cost with other cost, record as wages, rent, and depreciation etc. Last but not least, the traditional one can just use for cost accounting, but not for cost control. It costing by some simple ratio and records, cover up the reason and discrepancy of different cost. Because the traditional method can not find the exact reason of cost incurred, and the cause of cost changing, so the conventional method can not control the cost. Thus, the demand for a new costing method which can calculate both direct and indirect cost precisely is urgent.

In this chapter, the writer gives an example which use traditional costing method. Besides, writer analyzes both advantages and disadvantages of old costing method, pointed out that there is more harm than good.

Chapter IV Application of ABC in SQ Company

4.1 Research on the applicability of using ABC in SQ Company

Because there are many defects in traditional costing method, as well as the particularity of logistics cost, the writer trying to apply ABC in SQ Company, and then establish the cost control system based on the ABC method. Before put ABC to work, the writer will analyze the applicability of implementing ABC in SQ Company in theory.

4.1.1 The cost features of SQ Company

The product of SQ Company is logistics service, which has three main characteristics, intangibility, diversity and instantaneity. Intangibility means that the customer could

not feel the existence of logistics service before the deal. Diversity refers to that the logistics services are different according to customer's demand. Each customer has his or her particular requirement of the destination, storing days, quantity and distribution rate. And instantaneity means the customer only can enjoy the service immediately, it can not be storing to future.

These three main characteristics determined the features of logistics cost. Firstly, because the logistics service is intangible, most costs of SQ Company are indirect cost. Direct costs are relatively rare, especially direct material cost; some logistics services even have no direct material cost. This cost structure is complicated to distribution, besides, the selection of distribute standard have a great influence on the costing result. Secondly, the logistics services are variety, so the costs of each contract are different from each other. In order to reduce the cost, SQ Company shares its logistics resources between customers. The integration of customers makes the operating more complex, as well as the assignment of cost. Last but not least, the logistics service last for relative short period, because the process of production is the process of selling. Consequently, when SQ Company calculates its cost in the end of a contract, there is seldom or no unfinished works. The operating cost need not to be divided into current operating cost and next period operating cost.

4.1.2 The analysis of applicability

According to Robin Cooper (1990), there are six use conditions of ABC appliance: 1) the indirect costs take up a large proportion of product cost; 2) the industry or company is not satisfied with the cost information which calculated by traditional method; 3) the production and operation activities are complicated; 4) a wide variety products; 5) have modern computer technology and advanced automatic equipments; 6) carry out the Quality Management System (QMS) in the round.

As the analysis in last section, SQ Company satisfies almost basic conditions. First, the indirect cost is difficult to distribution. Indirect costs are the main part of SQ Company, but the indirect costs are assigned on the ground of direct cost or quantity. Both assignments are impossible to distribute the indirect cost in correct way. Because the direct costs only have litter proportion of total cost, so the former way is not apply to SQ Company. The latter one only can reflect how the quantity affect the cost, but can not reflect the function of service progress. This costing method causes the higher cost for simple contract, and lower cost for complex contract. In a word, it distort the logistics cost. Second, the business of SQ Company is providing logistics service for finished-vehicle manufactures. Different customers have their individual demand; even the contracts for a customer are varied. So, SQ Company is typical individual service provider. Third, SQ Company integrated its customers, share resources between them in order to decrease the cost. But this action also makes the operating more complicated, as well as the distribution of cost. Last but not least, SQ Company has purchase some advanced information system and modern automation equipments in recent years. Therefore, SQ Company has most conditions as requirements, it is qualified to apply ABC, and it is almost inevitable.

4.2 Building of costing model

The basic theory of ABC is "product customs activity, and activity customs resource". So the total logistics costs are the summation of each required activity's cost, and the cost of each activity is the product of relative resources and the expense of single resource. In other words, the cost of each activity equal to the product of total resource driver and cost rate of resource driver. The relations could express as follow formulas:

Total activity cost = required activity quantity * unit activity cost

= required activity quantity * resource quantity * unit resource cost

= required activity quantity *resource driver quantity *cost rate

Another way of calculation is on the base of how much percent does logistics service consume an activity, total activity cost of logistics service equals the proportion of logistics service consume the activities multiply by the resource cost of individual activity. It can be illustrated as formulas:

Total activity cost = the proportion of logistics consumes activity * the resource charge of activity

4.2.1 The model based on the basic theory of ABC

According to the characters of SQ Company and the service object of company, the logistics cost should calculated on the ground of the resource quantity that consumed by an particular activity, and then apply these number to the costs of logistics service in proportion to the volumes of activities that each logistics service consumes.

The calculation can be handled conveniently by equations as follows:

$$T \ = \ \sum_{i=1} \ \sum_{j=1} B_{ij} \times E_{j} \qquad\qquad (4\text{-}1)$$

B_{ij} is the ratios of "j" activity consumed by "i" logistics service to total activities number (i = 1, 2, $\cdots$, m, j = 1, 2, $\cdots$, n).

E_j means the resource expenses which "j" activity consumed (j = 1, 2, $\cdots$, n).

We can also state the expression by matrix:

$$T \ = \ \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \cdots & \cdots & b_{ij} & \cdots \\ b_{m1} & b_{m2} & \cdots & b_{mn} \end{bmatrix} \cdot \begin{bmatrix} e_1 \\ e_2 \\ \cdots \\ e_n \end{bmatrix} \qquad\qquad (4\text{-}2)$$

Generally speaking, this model considered resource and activity as a whole, it is simple to accounting, and points up the basic principle of ABC method. But the company should make the relative data ready before the calculation, such as activity rates and resource rates. But this method is not concerned with the construction of activity cost and cost behavior. So, it can not solve the costing problems of SQ Company.

4.2.2 The model based on the characteristics of activity

As the writer mentioned in above, the cost could divided into three types according to cost behavior, direct variable cost (short-term variable cost), indirect activity cost (long-term variable cost), and fixed cost.

We assume that SQ Company consumes k (k=1, 2, ⋯, s) kinds of resource in a period, and the whole process composed of j (j=1, 2, ⋯, n) activities, and the output were i (i=1, 2, ⋯, n) logistics service. And the total direct variable cost was A, the total indirect activity cost was B, the total fixed cost was C. A, B and C could express as follow:

$A = \sum_{i=1}^{m} b_i x_i$, b_i stands for the unit direct variable cost, x_i is the amount of logistics service.

$B = \sum_{i=1}^{m} \sum_{j=1}^{m} d_i y_{ij}$, d_j is the indirect activity cost of j activity, y_{ij} is the number of j activity which consumed by i service.

Now, we can conclude that the total logistics cost which based on the cost behavior equal to:

$T = A + B + C$

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$$= \sum_{i=1}^{m} b_i x_i + \sum_{i=1}^{m} \sum_{j=1}^{n} d_i y_{ij} + C \qquad (4\text{-}3)$$

This model was on the ground of cost behavior, it could reflect the cost structure of logistics service, but could not provide the detailed cost information of each activity. So, we should transform the formula to a matrix step by step.

The direct logistics cost A is:

$$A = \left(b_1 x_1, b_2 x_2, \ldots, b_m x_m \right)^T \qquad (4\text{-}4)$$

Matrix of resource cost is:

$$t = \left(t_1, t_2, \ldots, t_k, \ldots, t_s \right)^T, \text{ and } \sum_{k=1}^{s} t_k = T, \text{ T stands for the total cost.}$$

Suppose that resource driver is E, so $E = \left(e_1, e_2, \ldots, e_k, \ldots, e_x \right)^T$, and in this formula, e_k is the resource driver of t_k, k = 1, 2, …, s.

So, the matrix of resource driver is:

$$F = \left[f \right]_{n \times s} = \begin{bmatrix} f_{11} & f_{12} & \cdots & f_{1s} \\ f_{21} & f_{22} & \cdots & f_{2s} \\ \cdots & \cdots & f_{jk} & \cdots \\ f_{n1} & f_{n2} & \cdots & f_{ns} \end{bmatrix} \qquad (4\text{-}5)$$

And f_{jk} means the "j" activity consumes "k" kinds of resource driver.

In the matrix above, $f_{11}+f_{21}+\cdots+f_{n1}=e_1$, $f_{12}+f_{22}+\cdots+f_{n2}=e_2$, it follows that, $f_{1x}+f_{2x}+\cdots+f_{nx}=e_x$.

Therefore, the ratio of activity to resource could express by the matrix as follow:

$$F' = \left[f / e_s \right]_{n \times s}$$

$$= \begin{bmatrix} f_{11}/e_1 & f_{12}/e_2 & \cdots & f_{1s}/e_s \\ f_{21}/e_1 & f_{22}/e_2 & \cdots & f_{2s}/e_s \\ \vdots & \vdots & f_{jk}/e_k & \vdots \\ f_{n1}/e_1 & f_{n2}/e_2 & \cdots & f_{ns}/e_s \end{bmatrix} \qquad (4\text{-}6)$$

In the matrix, f_{jk}/e_k means the proportion of "j" activity consumes "k" resources.

The costs of total activities are:

$$B_1 = F't = \begin{bmatrix} f_{11}/e_1 & f_{12}/e_2 & \cdots & f_{1s}/e_s \\ f_{21}/e_1 & f_{22}/e_2 & \cdots & f_{2s}/e_s \\ \vdots & \vdots & f_{jk}/e_k & \vdots \\ f_{n1}/e_1 & f_{n2}/e_2 & \cdots & f_{ns}/e_s \end{bmatrix} \begin{bmatrix} t_1 \\ t_2 \\ \vdots \\ t_s \end{bmatrix} \qquad (4\text{-}7)$$

The total amount of activity driver is H, $H = (h_1, h_2, \ldots, h_j, \ldots, h_n)^T$,

$j = 1, 2, \cdots, n$.

The single activity driver is G,

$$G = [g]_{m \times n} = \begin{bmatrix} g_{11} & g_{12} & \cdots & g_{1n} \\ g_{21} & g_{22} & \cdots & g_{2n} \\ \vdots & \vdots & g_{ij} & \vdots \\ g_{m1} & g_{m2} & \cdots & g_{mn} \end{bmatrix} \qquad (4\text{-}8)$$

In the matrix, g_{ij} is "i" logistics service consumes driver of "j" activity.

As the definition above, $g_{11}+g_{21}+\cdots+g_{m1}=h_1$, $g_{12}+g_{22}+\cdots+g_{m2}=h_2$, and so on, $g_{1n}+g_{2n}+\cdots+g_{mn}=h_n$.

Thus, we could mark the proportion between the logistics service and activity driver as follow:

$$G' = [g/h_n]_{m \times n} = \begin{bmatrix} g_{11}/h_1 & g_{12}/h_2 & \cdots & g_{1n}/h_n \\ g_{21}/h_1 & g_{22}/h_2 & \cdots & g_{2n}/h_n \\ \vdots & \vdots & g_{ij}/h_j & \vdots \\ g_{m1}/h_1 & g_{m2}/h_2 & \cdots & g_{mn}/h_n \end{bmatrix} \qquad (4\text{-}9)$$

In the matrix, gij/hj is the ratio that "i" logistics service consumes "j" activity.

Then, the total indirect activity cost B is:

$B = G'B_1 = G'F't$

$$= \begin{bmatrix} g_{11}/h_1 & g_{12}/h_2 & \cdots & g_{1n}/h_n \\ g_{21}/h_1 & g_{22}/h_2 & \cdots & g_{1n}/h_n \\ \vdots & \vdots & g_{ij}/h_j & \vdots \\ g_{m1}/h_1 & g_{m2}/h_2 & \cdots & g_{mn}/h_n \end{bmatrix} \begin{bmatrix} f_{11}/e_1 & f_{12}/e_2 & \cdots & f_{1s}/e_s \\ f_{21}/e_1 & f_{22}/e_2 & \cdots & f_{2s}/e_s \\ \vdots & \vdots & f_{jk}/e_k & \vdots \\ f_{n1}/e_1 & f_{n2}/e_2 & \cdots & f_{ns}/e_s \end{bmatrix} \begin{bmatrix} t_1 \\ t_2 \\ \vdots \\ t_s \end{bmatrix}$$

$$(4\text{-}10)$$

As the result, the total logistics cot equal to T,

T $=$ A+B+C

$$= (\ b_1 x_1, b_2 x_2, \ldots, b_m x_m\ )^T +$$

$$\begin{bmatrix} g_{11}/h_1 & g_{12}/h_2 & \cdots & g_{1n}/h_n \\ g_{21}/h_1 & g_{22}/h_2 & \cdots & g_{1n}/h_n \\ \vdots & \vdots & g_{ij}/h_j & \vdots \\ g_{m1}/h_1 & g_{m2}/h_2 & \cdots & g_{mn}/h_n \end{bmatrix} \begin{bmatrix} f_{11}/e_1 & f_{12}/e_2 & \cdots & f_{1s}/e_s \\ f_{21}/e_1 & f_{22}/e_2 & \cdots & f_{2s}/e_s \\ \vdots & \vdots & f_{jk}/e_k & \vdots \\ f_{n1}/e_1 & f_{n2}/e_2 & \cdots & f_{ns}/e_s \end{bmatrix} \begin{bmatrix} t_1 \\ t_2 \\ \vdots \\ t_s \end{bmatrix}$$

$+$ C   (4-11)

In fact, depreciation expense is fairly low in ABC method, because the fixed cost only has a litter proportion in the total cost. So the fixed cost "C" can often be ignored during the costing.

The required data is: the quantity of a activity which consumed by a particular logistics service; the total amount of the activity; the quantity of resource which consumed by an activity; a sum of the resource; the total expense of the resource.

4.3 Calculation of activity cost

In this section, writer will apply the second model on a specific case step by step, then analyze the results.

4.3.1 Case description

In July, 2008, SQ Company signed two contracts with X Company and Y Company, both two contracts are provide logistics service for these two companies. X Company requires SQ Company transport 3500 BYD F3 from Xi'an to the Vehicle Storage Center (VSC) which in Qingdao. In additional, because these cars are shipping abroad, X Company asked that the cars delivered every six days. B Company demands 3500

FLYER from Xi'an to Qingdao, but B Company requires that dispatching carrier vehicle every day, no backlog. The logistics from manufacture to SQ Company were undertaken by X and Y Company.

SQ Company receives 1167 BYD F3 from the warehouse of X Company to the warehouse of itself every ten days. In order to meet the urgent need of X Company, SQ Company uses the warehouse which is $10,000m^2$. And the auto-vehicle transporters depart from Xi'an every six days.

Y Company sends 234 FLYER to SQ's warehouse every two days; these cars occupy an $8,100m^2$ warehouse. And SQ Company dispatches the transporters every day.

In this dissertation, writer makes the following assumption and simplifies the case. Firstly, since SQ Company just provides logistics service but without tangible products. In the case, the writer could put the fixed cost on hold since it is too low. So, the costs of these two contracts only include direct variable cost and indirect variable cost. Secondly, in order to compare these two contracts in a simpler way, assume that SQ Company only provide logistics service to X and Y Company, and the distance from X to SQ Company is as same as Y Company.

4.3.2 Definition and analysis of activity

The whole process of these two contracts including three stages: first step is receiving the cars from X or Y Company to SQ Company, then storing the cars in the warehouse, last one is transport the cars form warehouse to destination. According to the theory of ABC, there are six activities during the whole logistics process: order processing, transfer the cars from manufacture to logistics provider's warehouse, warehousing, highway transportation, check and acceptance of cars, put cars in storage in Qingdao. The cost drivers of relative activity are as table 4.1.

Table 4. 1 Activity and relative cost driver

Activity	Type	Resource Driver	Activity Driver
Order processing	Batch	Labor hours	No. of orders
Transfer	Batch	Labor hours	No. of cargo
Warehousing	Product	Labor hours	No. of cargo
Transportation	Unit	Number of transport vehicle	Transport mileage
Cargo Acceptance	Batch	Labor hours	No. of cargo
Storage in Qingdao	Product	Labor hours	No. of cargo

4.3.3 Identification of the resources

When the activities are defined, next step is identifying the resource expenses of each activity. In the following table 4.2, there are all the expenses for six activities in the case.

Table 4.2 Resource expenses of each activity

Activity	Resource expenses
Order processing	Wages of worker, communication fees.
Warehouse transferring	Wages of labor.
Warehousing	Payments of staff, rental of warehouse, communication fees, wages of casual labor.
Road transportation	Depreciation charge of carrier, the fee of fuel, road toll charge, insurance fee, highway maintenance fees.
Cargo acceptance	Payments of staff, communication fees.
Storage in Qingdao	Wages of crew.

4.3.4 Classification of the activity cost

The most important work in ABC method is to classify all the activities according to cost behavior. In more specific terms, this step is dividing the resource expenses into direct variable cost, indirect variable cost and fixed cost. As discussed previously, the fixed costs are not calculated in this case, so the resource expenses just are classified into two categories: direct variable cost and indirect variable cost. In table 4.3, writer dividing six activities into direct variable and indirect variable cost, and defining more specific items of each type.

Table 4.3 Cost behavior analysis

Activity	Direct variable cost	Indirect variable cost
Order processing		Wages of workers, communication fees, and other charges.
Warehouse transferring		Wages of workers.
Warehousing	wages of casual labors	Payments of staff, rental of warehouse, communication fees, and other charges.
Road transportation	The fee of fuel, road toll charge	depreciation charge of car transporters, insurance fee, highway maintenance fees, communication fee, etc.
Cargo acceptance		Payments of staff, communication fees and other charges.
Storage in Qingdao		Wages of crew.

4.3.5 Calculation of the activity cost

4.3.5.1 Calculation of each activity

On the basis of resource and cost behavior, now we could calculate the cost of each activity. Of course, costing in this chapter is just estimation of budget, in later chapter, the writer will compare estimate cost to real cost.

Activity one: order processing. SQ Company receive 3,500 cars from both X and Y Company in each month. Collect 1,167 cars form X Company every ten days, and receipt 234 cars form Y Company every two days. So, there are 18 orders for SQ Company in each month. The detailed cost information is listed in table 4.4.

Table 4. 4 Cost of order processing

Cost term	Cost (RMB/month)	Remarks
Wages of workers	1,500	Just one worker
Communication fees	300	
Other charges	100	Office supplies
Total	1,900	

Activity two: transfer of cargo to SQ Company's warehouse. The cost of transferring is the wages of six workers. The workers are divided into two groups, and each group has one leader. The payments of leader are RMB1, 800/month, and other group members have RMB1,200/month. So, the total cost of transferring is 1800*2+1200*4= RMB 8,400/month.

Activity three: warehousing. The warehousing cost has two kinds: direct cost and indirect cost. Direct cost is the wages of three casual labors, RMB 1,200/month for each labor, and the man hours are 60 hours/person in a month. Thus, the unit direct cost = 1200/60= RMB20/hour, and the monthly cost for these three casual labors is

RMB1200*3=RMB3, 600. The indirect cost has four items which as table 4.5.

Table 4. 5 Indirect cost of warehousing

Activity	Cost (RMB/month)	Remarks
Payments of staff	2,800	Two warehousemen, each one has RMB1,400/month
Rental of warehouse	35,000	The rent of warehouse which storing for X Company's cars, is RMB420, 000/Year.
	29,167	The rent of warehouse which storing for X Company's cars, is RMB350, 000/Year.
Communication fees	100	RMB50/month for each warehouseman.
Other charges	200	Equipment fees and so on.
Total cost of X Company	38,100	
Total cost of Y Company	32,267	

Activity four: road transportation. Different motor transport vehicle has different loading capacity. According to the model of BYD F3 and FLYER, SQ Company decide to use advanced carrier which could transport 8 BYD F3 or FLYER at a time. Besides, the distance between Xi'an and Qingdao is 1527 kilometers, a round trip will cost five days.

The cars of X Company are transport every 6 days, 5 times in a month. So each time carries 3600/5=720 BYD F3, and 8 cars loaded in a carrier, there are 720/8=90 transporters needed for each time. Because the round trip costs five days and SQ Company sends transporters every six days, therefore, these 90 transporters could be cycled to carrying cars. In other words, there are 90 car transporters needed to

completed X Company's contract.

For Y Company, FLYER cars are transported every day, 3600/30=120 cars each time, and also 8 cars loaded in a carrier. Thus, 120/8=15 transporters are needed every day. Since the carriers need five days to complete a round trip, so, SQ Company needs 15*5=75 automobiles carriers at least.

The road transportation cost also divided into direct cost and indirect cost. Direct cost is relative to distance, and indirect cost has the connection with transportation times.

Direct cost equals to the " $\sum_{i=1}^{m}(b_i x_i)$ " which in costing model, b_i stands for the unit distance cost, x_i is the mileage. Direct cost includes the fee of fuel and road toll charge, as table 4.6.

Table 4. 6 Direct cost of road transportation

Direct activity cost	Unit distance cost (b_i)	Remarks
The fee of fuel	RMB1.63/mile	Manager estimates the price of diesel fuel is about RMB5.1/L in July, 2008, and the transporter consumes 32L/ 100 miles. This figure is the average of round trip.
Road toll charge	RMB0.6/mile	According to the former statistics. This figure is the average of round trip rate.

As the information of table 4.6, the direct variable cost of a transporter from Xi'an to Qingdao is: (1.63+0.6)*1527=RMB3405/transporter

So, the direct transportation cost of X Company is 3405*88*5=RMB1, 498,200/month

And the direct transportation cost of Y Company is 3405*15*30= RMB1, 532,250/month

The indirect costs of transportation are listed in table 4.7.

Table 4. 7 Indirect transportation expenses

Indirect activity cost	Expenses (RMB/month)	Remarks
Depreciation charge of car transporters	5000	The transporter was purchased at RMB300,000, purchase tax costs 10%, RMB20,000 for license, using for 5 years, residual value is RMB50,000.
Insurance fee	1400	All risks, RMB16,800/year
Highway maintenance fees	3600	RMB180/month*ton, the maximum load for the carrier is 20 tons.
Communication fee	200	
Carriers maintenance	300	According to the former statistics.
Cost of tires	600	According to the former statistics.
Transport administration fee	1000	RMB50/month*ton, the maximum load for the carrier is 20 tons.
Annual examination fee	125	RMB1500/year.
Total	12,225	

And the transportation teams running on three shifts. So, the indirect transportation cost of X Company is: 12,225*440/3=RMB1, 793,800/month. The indirect transportation cost of Y Company is: 12,225*450/3=RMB1, 833,750 /month.

Activity five: check and acceptance. The charges of check and acceptance are indirect costs. The detailed information is in table 4.8.

Table 4. 8 Cost information of cargo acceptance

Activity cost	Cost (RMB/month)	Remarks
Payments of staff	1400	Only one inspector.
Communication fees	100	
Other charges	100	Some expendable office supplies.
Total	1600	

Activity six: storage in Qingdao. This activity only has labor cost. There are six workers who work for warehouse in Vehicle Storage Center of Qingdao, they formed into two groups, and five workers per each team. The wages for a team leader are RMB1800/month, and other workers have RMB1400/month. Therefore, the total costs of storage are: 1800*2+1400*4=RMB9200/month.

Now, the costs of total six activities are calculated, the total cost of X and Y Company could be added as table 4.9 and table 4.10.

Table 4. 9 The total estimated cost of X Company

Activity	Activity cost (RMB)		
	Direct variable cost	Indirect variable cost	Total
Order processing	0	1,900	1,900
Transfer	0	8,400	8,400
Warehousing	3,600	38,100	41,700
Road transportation	1,498,200	1,793,800	3,292,000
Cargo acceptance	0	1,600	1,600
Storage in Qingdao	0	9,200	9,200
Total	1,501,800	1,853,000	3,354,800

Table 4. 10 The total estimated cost of Y Company

Activity	Activity cost (RMB)		
	Direct variable cost	Indirect variable cost	Total
Order processing	0	1,900	1,900
Transfer	0	8,400	8,400
Warehousing	3,600	32,267	35,867
Road transportation	1,532,250	1,833,750	3,366,000
Cargo acceptance	0	1,600	1,600
Storage in Guiyang	0	9,200	9,200
Total	1,535,850	1,887,117	3,422,967

As above tables showed, the total cost of X Company is RMB 3,354,800, and Y Company costs RMB 3,422,967. The present data was estimated cost which calculated on the ground of experiences and former information. It used for making a budget, or making decisions. Usually, the estimated cost has cost variance with practical cost.

4.4 Distribution of indirect activity cost

The most important feature of ABC is activity driver which used for distribute activity cost to cost object or other activity; it is the way that how does activity contribute to final product, as well as the cause. Decision maker could measure the demand and frequency of a specific activity by activity driver. Besides, the analysis result of activity driver is a standard by which value-added activity can be judged.

In this case, the activity driver consumed by two contracts are analyze in table 4.11.

Table 4.11 Activity driver analysis

Activity driver	Unit	Quantity of activity driver		
		Total	X Company	Y Company
Ordering frequency	Number of times	18	3	15
Warehouse transferring frequency	Number of times	7,000	3,500	3,500
Area of warehouse	Square meter	18,100	10,000	8,100
Road transportation frequency	Number of times	890	88*5=440	15*30=450
Check and acceptance frequency	Number of times	7,000	3500	3500
Storage in Qingdao	Number of times	7,000	3,500	3,500

With the information above, we could calculate the distribution ratio of the activity driver and distribute the activity cost to different objects of cost calculation. Table 4.12 showed the distribution ratio of activity driver in X Company, and in table 4.13, it is the distribution ratio of activity driver in Y Company.

Table 4. 12 Distribution ratio of activity driver in X Company

Activity	Resource driver	Resource quantity	Activity driver	Activity quantity	Distribution ratio of activity driver
Order processing	Labor hours	1,900	Amount of orders	3	RMB633.33/order
Warehouse transferring	Labor hours	8,400	Transfer times	3,500	RMB2.4/time

Warehousing	Cargo quantity	41,700	Area of cargo	10,000	RMB4.17/m^2
Road transportation	Cargo quantity	3,292,000	Transportation times	440	RMB7481.8/time
Cargo acceptance	Labor hours	1,600	Activity times	3,500	RMB0.46/time
Storage in Qingdao	Labor hours	9,200	Entering times	3,500	RMB2.63/time

Table 4. 13 Distribution ratio of activity driver in Y Company

Activity	Resource driver	Resource quantity	Activity driver	Activity quantity	Distribution ratio of activity driver
Order processing	Labor hours	1,900	Amount of orders	3	RMB633.33/order
Warehouse transferring	Labor hours	8,400	Transfer times	3,500	RMB2.4/time
Warehousing	Cargo quantity	35,867	Area of cargo	8,100	RMB4.43/m^2
Road transportation	Cargo quantity	3,366,000	Transportation times	450	RMB7480/time
Cargo acceptance	Labor hours	1,600	Activity times	3,500	RMB0.46/time
Storage in Qingdao	Labor hours	9,200	Entering times	3,500	RMB2.63/time

So far, the estimation of these two contracts' cost is completed. Compared the cost of these two contracts, it is obviously that the cost of Y Company is much lower than X Company. And the main difference is the transportation cost, because the logistics service provided for Y Company use just 15 automobile transporters, the indirect cost was only 17% of X Company's. Through the costing, the manager of SQ Company could know the cost structure clearly, and easily to catch the activity which occupying high percentage. Then, SQ Company could making a plan which aim at reduce the higher cost, adjust the cost structure to the reasonable degree. That is very important step to SQ Company. Without this step, SQ Company may collect less charge from X Company, and inducing the lost.

This chapter focus on apply ABC method on SQ Company by two specific contracts.

Firstly, the writer analyzes the applicability of using ABC in SQ Company. When build and select the suitable costing model, writer use ABC method to calculate the cost. At last, assign the indirect cost.

Chapter V The cost control system of SQ Company based on ABC

5.1 Divided activities into value-added and non value-added activities

In the article, the writer divided the activities of cost control system into value-added activities and non value-added activities. In short, value-added activities are the activity which could bring profits to logistics process or customers, and the activities which could be cancel or reduce are non value-added activities.

The writer already classified the cost driver in last chapter. Usually, decision maker could judge the characteristic of activities by analyze the relation between activity driver and final product. If the activity is needed and played an irreplaceable role during the processing, and add special value for final product, it was value-added activities. There are two categories of value-added activities: one is add value for customers, such as packaging and delivery. Another one was ensure the operating of enterprise, like paying staff wages, although this activity could not bring profit for customers, but this is essential activity of logistics enterprise. Conversely, non value-added activities could be eliminated or decrease, while there will be no adverse impact on customer's demands. Non value-added activities also consume resources, but it is the waste of resources rather than reasonable consumption. For instance, the removals within the company consume resources and take distance of removal as activity driver, but this activity could reduced by shorten the distance. So, this activity is non value-added activity, the company should eliminate it in order to reduce the cost.

Through the analysis of value-added activities and non value-added activities, the company could find the reason of higher cost, and then decrease the non value-added

activities for reduce the total cost and improve the efficiency. Therefore, categorize the activities is very important in build cost control system. The process of activities' analysis is as figure 5.1.

```
                    ┌─────────────────┐
                    │  Object activity │
                    └─────────────────┘
                             │
                             ▼          Yes
                    ┌─────────────────┐─────────────┐
                    │  Does customer  │             │
                    │  need it?       │             │
                    └─────────────────┘             │
                             │ No                   ▼
┌──────────────┐ Yes ┌──────────────┐ No ┌──────────────────┐ Yes ┌──────────────────┐
│ Cancel this  │◄────│ Does   this  │───►│ Could        the │────►│ Decrease   the   │
│ activity to  │     │ activity could│    │ activity consume │     │ consumption      │
│ reduce  the  │     │ be eliminated?│    │ less resource?   │     │ and reduce  the  │
│ cost         │     └──────────────┘    └──────────────────┘     │ cost             │
└──────────────┘                                  │ No            └──────────────────┘
                                                  ▼
                                         ┌──────────────────┐ Yes ┌──────────────────┐
                                         │ Does the activity│────►│ Eliminate   the  │
                                         │ include any non  │     │ non              │
                                         │ value-added      │     │ value-added      │
                                         └──────────────────┘     │ part.            │
                                                  │ No            └──────────────────┘
                                                  ▼
                                         ┌──────────────────┐
                                         │ The  cost  could │
                                         │ not  be  reduced │
                                         │ any more.        │
                                         └──────────────────┘
```
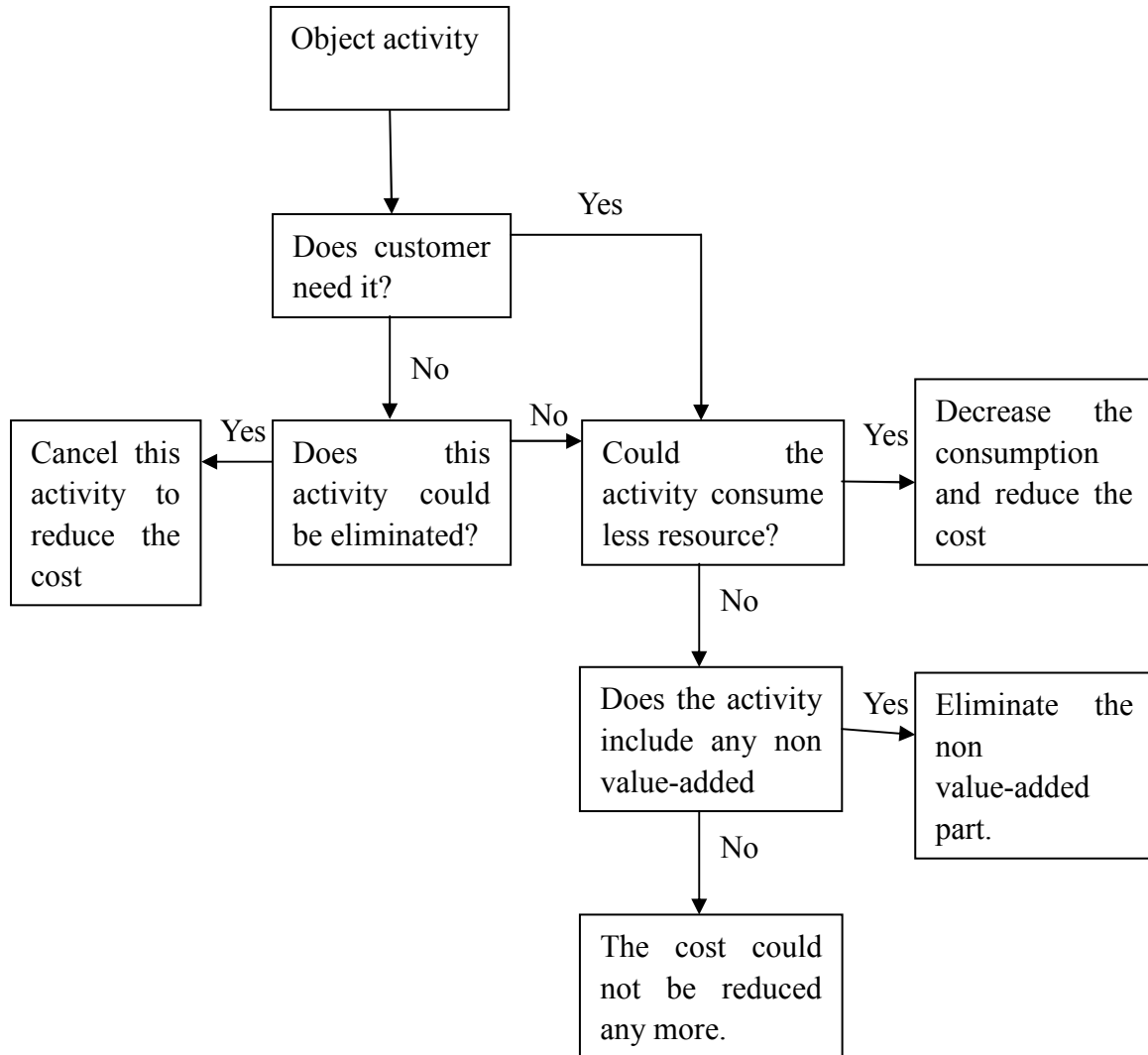
Figure 5.1 The process of activities' analysis

The activity which could meet three conditions is value-added activity: first, this activity has definitional function; second, this activity could provide value for final product or service; last but not least, this activity could not be eliminate, merger or replacing. If the activity did not satisfied one of these conditions, it is non value-added activity rather than value-added activity.

As the definition and characteristics of value-added and non value-added activities, the writer classified six activities in the case as table5.1.

Table 5. 1 The characteristics of activities

Activity	Have definitional function	Provide value for final product or service	Could not be eliminate, merger or replacing	Classification
Order processing	Yes	Yes	Yes	Value-added activity
Warehouse transferring	Yes	Yes	Yes	Value-added activity
Warehousing	Yes	Yes	Yes	Value-added activity
Road transportation	Yes	Yes	Yes	Value-added activity
Cargo acceptance	Yes	No	No	Non value-added activity
Storage in Qingdao	No	No	No	Non value-added activity

5.2 Counting the standard of cost

Since the activities divided into value-added and non value-added activities, the standard of cost also has two kinds: standard of value-added activities and standard of non value-added cost.

The cost of value-added activities should be the only cost of enterprise, but enterprise needs to increase the efficiency of value-added activities, optimize the production of value-added activities. And there are two standards of value-added activities, ideal standard cost and reality standard cost. As is implied by the name, ideal standard cost is an extremely tight standard; it demands perfection and does no tolerate waste or inefficiency in any form. If the company was focus on saving non value-added activities cost, it can establish the ideal standard cost to identifying the reformation for the next year. Reality standard cost is calculated according to the predicted resource consumption and estimated resource price of improved activities which under the reality and effective operating conditions. When estimating this kind of cost, usually include some non value-added activities which can hardly be avoided, such as dissipation. So, reality standard cost conforms to facts, it is the most practicable performance evaluation criterion. However, establish the standard cost does not mean it can be realized immediately, the company should close to it step by step.

Standard cost of value-added activities take each logistics activity as object, composed of standard fixed cost and standard variable cost (consist of standard direct cost and standard indirect cost). Standard fixed cost was determined by experience, former data or the provision of authorities. Standard variable cost was making up of standard logistics activity quantity and unit price of standard logistics activity. And the standard logistics activity quantity comes from logistics proposal; unit price of logistics activity was depending on the standard consumption and standard price of resource. Moreover, the standard consumption was decided by the executive department; standard price of resource was fixed by company in a uniform way. The formula is: standard cost of value-added activity = standard fixed + standard variable cost = standard direct variable cost + standard indirect cost. The standard variable cost was counting as: standard variable cost = standard unit variable cost × standard activity quantity = standard unit resource consumption × standard resource expense × volume of standard cost drivers

Non value-added activities could not provide any value for customers or company, so the relative costs are useless, it is meaningless that make the standard of non value-added activities cost. Yet, in order to control the cost of non value-added activities and reduce non-efficient expense, the standard of non value-added activities could express as: standard cost of non value-added activities = standard fixed cost + standard variable cost =RMB 0.

In the case, on the basis of former estimation, the standard costs are as following. Order processing, warehouse transferring, warehousing and road transportation are value-added activities.

Order processing: Standard direct variable cost =RMB 0

Total standard cost = RMB1, 800

Transfer the cars form manufacture to logistics provider's warehouse: standard direct variable cost = 0, total standard cost = RMB9, 000

Warehousing: standard direct variable cost = RMB20/hour$\times$60hour$\times$3=RMB3, 600

Standard indirect cost = RMB4/m^2 $\times$18,100m^2 =RMB72, 400

Total standard cost = 3,600 + 72,400 = RMB76, 000

Highway transportation: standard direct variable cost = RMB2.23/mile$\times$1527mile =RMB3, 405

Standard indirect cost = RMB12, 225/3=RMB4, 075

On the other hand, check & acceptance of cars and put cars in storage in Qingdao are non value-added activities. So, the standard cost of these activities is zero. In order to make comparison between estimated cost and practical cost, the estimation of these activities calculate as follow.

Check and acceptance of cars: direct variable cost =RMB 0

<div align="center">Indirect cost = RMB1, 600</div>

<div align="center">Total cost = RMB1, 600</div>

Storage in Qingdao: direct variable cost =RMB 0

<div align="center">Indirect cost = RMB9, 200</div>

<div align="center">Total cost = RMB9, 200</div>

5.3 Practical cost accounting

The practical cost also counting by six activity costs.

Activity one: order processing. The practical cost of order processing is as table 5.2.

<div align="center">Table 5. 2 The practical cost of order processing</div>

Cost term	Cost (RMB/month)	Remarks
Wages of workers	1,500	Just one worker
Communication fees	250	
Other charges	50	Office supplies
Total	1,800	

Second activity is transferring the cars from manufacture to logistics provider's warehouse. This activity was outsourcing to an shipping company, and the expense was RMB12, 000.

The cost of storing in SQ Company consists of direct cost and indirect cost. The direct cost was the wages of casual labors, the unit cost was RMB20/hour, and there is 180hours/month in total. So, the direct cost was RMB20/hour×180=RMB3, 600.

The indirect cost of warehousing is as table 5.3.

Table 5. 3 The indirect cost of warehousing

Activity	Cost (RMB/month)	Remarks
Payments of staff	2,800	Two warehousemen, each one has RMB1,400/month
Rental of warehouse	35,000	The rent of warehouse which storing for X Company's cars, is RMB420,000/Year.
	29,167	The rent of warehouse which storing for X Company's cars, is RMB350,000/Year.
Communication fees	200	RMB100/month for each warehouseman.
Other charges	350	Equipment fees and so on.
Total cost of X Company	38,350	
Total cost of Y Company	32,517	

The cost of highway transportation also has direct cost and indirect cost. Direct cost listed in table 5.4.

Table 5. 4 The direct cost of highway transportation

Direct activity cost	Unit distance cost (b_i)	Remarks
The fee of fuel	RMB1.73/mile	The price of diesel fuel is RMB5.4/L in July,2008, and the transporter consumes 32L/ 100 miles. This figure is the average of round trip.
Road	RMB0.6/mile	According to the former statics. This figure is the

toll charge		average of round trip rate.

As the information of table 5.4, the direct variable cost of a transporter from Xi'an to Qingdao is: (1.73+0.6)*1650=RMB3, 844.5/transporter.

So, the direct transportation cost of X Company equal to 3844.5*88*5=RMB1, 691,580/month

And the direct transportation cost of Y Company is 3844.5*15*30= RMB1, 730,025/month.

The indirect cost of highway transportation was showed in table 5.5.

Table 5. 5 The indirect cost of highway transportation

Indirect activity cost	Expenses (RMB/month)	Remarks
Depreciation charge of car transporters	5000	The transporter was purchased at RMB300,000, purchase tax costs 10%, RMB20,000 for license, using for 5 years, residual value is RMB50,000.
Insurance fee	1400	All risks, RMB16,800/year
Highway maintenance fees	3600	RMB180/month*ton, the maximum load for the carrier is 20 tons.
Communication fee	200	
Carriers maintenance	300	
Cost of tires	400	

Transport administration fee	1000	RMB50/month*ton, the maximum load for the carrier is 20 tons.
Annual examination fee	125	RMB1500/year.
Total	12,025	

And the transportation teams running on three shifts. So, the indirect transportation cost of X Company is: 12,025*440/3=RMB1, 763,667/month. The indirect transportation cost of Y Company is: 12,025*450/3=RMB1, 803,750 /month.

The expenses of check and acceptance of cars are indirect cost which as table 5.6.

Table 5. 6 The expenses of cargo acceptance

Activity cost	Cost (RMB/month)	Remarks
Payments of staff	1400	Only one inspector.
Communication fees	50	
Other charges	50	Some expendable office supplies.
Total	1500	

The sixth activity is put cars in storage in Qingdao. This activity only has labor cost, There are six workers who work for warehouse in Vehicle Storage Center of Qingdao, they formed into two groups, and five workers per each team. The wages for a team leader are RMB1800/month, and other workers have RMB1, 400/month. Therefore, the total costs of storage are: 1800*2+1400*4=RMB9, 200/month.

Now, the total practical cost of X and Y Company could be summed according to the above data and tables. Table 5.7 list the total practical cost of X Company, and the total practical cost of Y Company is listed in table 5.8.

Table 5. 7 The total practical cost of X Company

Activity	Activity cost (RMB)		
	Direct variable cost	Indirect variable cost	Total
Order processing	0	1,800	1,800
Transfer	0	12,000	12,000
Warehousing	3,600	38,350	41,950
Road transportation	1,691,580	1,763,667	3,455,247
Cargo acceptance	0	1,500	1,500
Storage in Qingdao	0	9,200	9,200
Total	1,695,180	1,826,517	3,521,697

Table 5. 8 The total practical cost of Y Company

Activity	Activity cost (RMB)		
	Direct variable cost	Indirect variable cost	Total
Order processing	0	1,800	1,800
Transfer	0	12,000	12,000
Warehousing	3,600	32,517	36,117
Road transportation	1,730,025	1,803,750	3,533,775
Cargo acceptance	0	1,500	1,500
Storage in Qingdao	0	9,200	9,200
Total	1,733,625	1,860,767	3,594,392

5.4 Comparison of standard cost and practical cost

So far, both the estimated cost data and practical cost information have been

calculated. Of course, there are cost variances between these two results. In this section, writer will counting the balances and analyzes the cause of the balances.

5.4.1 Calculate the difference of cost

The differences between estimated cost and practical cost now can be counted through the comparison; the detailed figures are listed in table 5.9 and 5.10.

Table 5. 9 The cost variance of X Company's contract

Activity	Estimated cost		Practical cost		Cost variance	
	Direct variable cost	Indirect variable cost	Direct variable cost	Indirect variable cost	Direct variable cost	Indirect variable cost
Order processing	0	1,900	0	1,800	0	100
Transfer	0	8,400	0	12,000	0	3,600
Warehousing	3,600	38,100	3,600	38,350	0	250
Road transportation	1,498,200	1,793,800	1,691,580	1,763,667	193,380	30,133
Check and Acceptance	0	1,600	0	1,500	0	100
Storage in Guiyang	0	9,200	0	9,200	0	0
Total	1,501,800	1,853,000	1,695,180	1,826,517	193,380	26,183

From table 5.9, we can see that the cost variance of direct variable cost was much bigger than indirect cost. The total cost variance is RMB219, 563, and the direct variable cost is RMB193, 380 which almost take 90%. And all the difference of direct

variable cost was caused by road transportation which has RMB 193,380.

Table 5. 10 The cost variance of Y Company's contract

Activity	Estimated cost		Practical cost		Cost variance	
	Direct variable cost	Indirect variable cost	Direct variable cost	Indirect variable cost	Direct variable cost	Indirect variable cost
Order processing	0	1,900	0	1,800	0	100
Transfer	0	8,400	0	12,000	0	3,600
Warehousing	3,600	32,267	3,600	32,517	0	250
Road transportation	1,532,250	1,833,750	1,730,025	1,803,750	197,775	30,000
Check and Acceptance	0	1,600	0	1,500	0	100
Storage in Guiyang	0	9,200	0	9,200	0	0
Total	1,535,850	1,887,117	1,733,625	1,860,767	197,775	26,350

As table 5.10 showed, the cost variance of direct variable cost also is the major part. The total cost variance is RMB224, 125, and the direct variable cost is RMB197, 775 which almost take 90%. In specific, RMB 197,775 was caused by road transportation. And the cost variance of Y Company was higher than the cost variance of X Company. The courses of cost variance are explaining in next section.

5.4.2 Examination of the reasons

The analysis of cost variances should divided into two aspects, value-added activity cost variances and non value-added activity cost variances. First, analysis the value-added activity cost variances. Order processing, transferring, warehousing and road transportation are all belong to value-added activities, here take road transportation as example because it is the most representative item.

The direct variable costs of highway transportation are composed of fuel fees and road toll charges, and it is the changes of both items induce the cost variances. When SQ Company estimating the cost, the estimated distance is 1,527 miles, but in reality, since the maintenance of highway, the distance changed into 1,650 miles. The deviation of running distance was one of the reasons that induced the cost variance. Besides, the fuel price increased from estimated RMB5.1/l to RMB5.4/l, deviated from the standard cost. It is another reason of cost variances. The cost variance of direct variable cost = (real activity cost×real activity quantity) — (standard activity cost×standard activity quantity) = (5.4×1650) — ((5.1×1527) = RMB1122.3

The indirect costs of road transportation are Depreciation charge of car transporters, insurance fee, highway maintenance fees, communication fee, carriers' maintenance fee, cost of tires, transport administration fee, and Annual examination fee. Most of these objects are unchanged, only cost of tires has been changed. So, the cost variance of indirect cost was caused by the decrease of these expenses. The cost variances of indirect cost = 600—400=RMB200. This figure indicates that the cost consciousness of staff has improved, so the indirect cost was reduced. SQ Company should promote this way of cost reduction.

The non value-added activities cost has cost variances as well as value-added activities. As non value-added activities, the standard cost should be zero. In fact, the non value-added cost = 1500 + 9200=RMB10,700, it is RMB100 lower than estimated cost, but still exist. To be more specific, the RMB100 was reduced by the communication fees and other charges of inspector. In fact, both X and Y Company

have inspectors in destination, thus the payments of inspector, RMB1,400 can not provide any value for customers or SQ Company. In other words, cargo acceptance could be abolished at all.

5.5 Analysis of two logistics services

Although the total quantity of cars is same for two contracts, it is obviously that the costs are differently, because the different company has different requirements. The cost of Y Company was higher than X Company. And in order to satisfying the demand of Y Company, SQ Company has great difficulty in the dispatch of transporters, such as the high ratio of empty load. But Y Company pays RMB1.8/mile for each FLYER car, and X Company pays RMB1.7/mile for each BYD F3. It is RMB0.1/mile for each car, actuate SQ Company carry on the contract of Y Company, and earn more profit than X Company's contract. From this case, SQ Company controlling several ways to improve service quality as well as decrease logistics cost. First of all, realize economies of scale. Large numbers of transporters are indispensable to accomplish the transportation task. At the same time, it is also necessary to satisfy the customization at present. Enlarge the amount of carriers could make the management of carriers more convenient and content. And the development of SQ Company is the enlargement of its convoy to some extent. More transporters, higher market share.

Moreover, sharpen information technology. Information system is very important in finished-vehicle logistics system, it could improve the efficiency of service as well as reduce the cost. By the use of internet, EDI, GPRS and other technology, SQ Company could link its outlets together to optimize the resource allocation and get better control on the whole process. Through the tracking and tracing, company could reduce the waste in the procedure, improve the service quality and make adjustment at

any moment.

Last, the company should train the employees to suit for the new challenge. Personnel are the key point of the company, workers and drivers are as important as manager.

5.6 Suggestion of cost control measurement

The logistics cost was more convenient to check by ABC method, and the another advantage of ABC is that the manager could manage and control the cost by activity management. Activity management means regard the enterprise as the activity pool which made up of the customer needed activities. When managing the activity pool, the manager should aimed at improve the efficiency of value-added activities, eliminate the non value-added activities, try to realize the continued improvement of company. Generally speaking, there are four steps in activity management: activity confirmation, analysis of cost driver, performance evaluation and report the non value-added activity cost. Activity management mainly use following ways to reduce the cost. Firstly, definite the non value-added activities, and then eliminate them. Second, chose the activity which has the lowest cost. For instance, different marketing strategy has different marketing activities, and different activities induce different cost. If other conditions are same, the manager should chose the strategy which has the least activity cost to reduce the total cost. Third, improve the efficiency of value-added activities, or optimize the non value-added activities which could no be eliminated in the short term. The world famous engine and locomotives manufacture-Hardley Davidson reduce 75% machine setups activities by this way, and lower the cost in large extent. Fourth, share the activities within the company. In other words, increase the number of cost driver without the raise of activity cost. In this way, the unit activity cost could be lower. For example, when the company designs a product, the designer should in consideration of fully utilizing the current components, instead of design and produce more newly parts.

For SQ Company, here are some specific suggestions which based on the activity management. First, both cargo entering the warehouse and delivery from the warehouse were operated by labor, it is dangerous, inefficient and high cost activity. The advanced equipments should be introduced into SQ Company instead of labor work.

Next, cost of warehousing accounts for high percentage in total cost. SQ Company should put stress on simplifying the procedures, optimize the utilization of the area and shorten the warehouse period. Such as applying operational research on warehousing management, proceed reasonable planning on the layout and number of warehouse, and improve the cost control of warehousing.

Third, road transportation costs the most found in logistics service, it is huge. One of the major parts is the penalty of over-loaded. It is emergent that change the auto-mobile transporters' type or use other ways to avoid the penalty.

Besides, the non value-added activities such as cargo acceptance should be canceled to reduce the unnecessary costs.

Last but not least, SQ Company should strengthen the cost consciousness of their employees. Reduce the cost of every department in the company, and apply ABC method in the whole company.

Chapter five aim at building the cost control system of SQ Company which based on ABC method. The first step is divide activities into value-added and non value-added. Next, fix the standard of cost. Then, calculate practical cost, and compare it with standard cost. In addition, writer analyzes two logistics contracts, state the later one could bring more profit for SQ Company. Finally, writer give several suggestions for SQ Company in the view of cost control management.

Chapter VI Conclusion

With the development of auto-mobile manufacture industry, the third party auto-mobile logistics industry also growing fast, and SQ Company was one of them. But this new industry still has some problems, such as poor costing method and cost management. This dissertation mainly research on the costing method and cost control system of SQ Company, which is the finished-vehicle logistics company. Introducing activity based costing method in the company, and build the cost control model on the basis of activity based costing.

In the beginning part, the writer make a brief introduction of ABC, reviewed the origin and theory of ABC. Then, stated the general situation of SQ Company, give a specific case which use the traditional costing method, and point out the advantages and disadvantages of this method. Next, the writer tries to carry on the ABC in SQ Company. First, analyze whether ABC method could use in the company. And then, build two kinds of costing model, one is based on the fundamental theory of ABC, another one is in terms of the characteristics of activities. Through the comparison, choose the second one for SQ Company. When build the costing model, the writer estimated the logistics cost of two contracts, analyze the cost structure, also discussed the way to reduce the cost. The establishment of cost control system was on the ground of costing result. The writer determined each kind of standard cost, calculate

the practical cost, compare the estimated cost to the real cost, and explain the reason of cost variances.

Because the limitation of time and the resources, this dissertation only researches on how to applying ABC method in SQ Company (an automobile transport company). There must be some deficiencies in the paper, and the theory, model and system which mentioned by the writer are remained to be probing and improvement.

Implement ABC method in third party logistics industry is a fresh research area, it is a broad discipline. Many problems are still needs further study. First, the theory of ABC needs to improve. Such as how to chose the cost driver, as well as the establishment of activity costing system. Second, the costing method and cost control model in this paper just suit for the logistics service which has simple structure and the number of activities and resources are relative low. But for the logistics service which operates in longer term in the meantime, get involved in large quantity of activities and resources, the biggest challenge is how to getting data information and huge calculated amount. Advanced activity costing software is the key of the further studying. Third, pay more attention on putting activity cost management and other management or strategy all together. Provide more accurate and particular information for decision maker.

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