

STRATEGIC COST MANAGEMENT IN E-SUPPLY CHAIN

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Abstract

Strategic cost management of the E-supply chain is one new concept which integrates three fields: strategic cost management, supply chain management and internet application, and develops one of the most important tools about how to apply E-supply chain to the improvement of the competence in creating wealth for firm shareholders and market competitive capacity. This study has two objectives: one is to discover the cyber-value chain coordinating mechanism which is one new mechanism other than market mechanism and firm mechanism; the other one is to construct the framework model of strategic cost management accounting of E-supply chain based on the new mechanism. More specifically, this paper develops three main methods of strategic cost management (including sharing information beyond one company boundary, the synergic management of the product design, and synergic utilization and management of intellectual assets), in order to improve the competitive capacity and to solve some current problems in the cost management beyond company boundary.

Keywords: Strategic cost management, E-supply chain, Cyber-value chain, Cyber-value chain coordinating mechanism, Value chain

Introduction

In the process of economic globalization, the fierce competition among firms is evolving into the competition among supply chains (or firm groups) in local and international market. Supply chain management evolved from a traditional focusing on purchasing and logistics practiced between 60's and mid 90's, to a broader, more integrated emphasis on value creation in the new millennium. It is a key issue for firms how to use supply chain to create value for themselves, especially, to improve their competitive competence. Leading companies increasingly view supply chain excellence as more than just a source of cost reduction rather, they see it as a source of competitive advantage, with the potential to drive performance improvement in customer service, profit generation, asset utilization, and cost reduction. Effective collaboration within each entity (cross-functional) and between chain entities (cross-enterprise) is essential to achieve these goals, individually and collectively. What should management accountants do in the strategic cost

management in supply chain? Some papers (Simmonds, 1981; Allen, 1985; Shank and Govindarajan, 1992; Yu, 1997; Anderson, 2006) suggest applying strategic cost management methods to help accountants to have a better grasp of strategic cost management methods for improving competitive competence.

Since the earliest book of strategic management accounting having been published (Simmonds, 1981) for more than 20 years, there are several different definitions about strategic management accounting in prior literature. Such as, strategic management accounting played a key role in strategic description, strategic announcing, strategic implement and strategic control¹ (Shank and Govindarajan, 1992). strategic decision-making should be based on predictive information, investment information and future cash flow instead of the traditional accounting information and historical cost information (Allen, 1985), and strategic management accounting provides management accounting information for competitive strategy, firm development, market changes, corporate strategic program, strategic implementation and strategic control, and strategic management accounting combines strategic management and management accounting (Ward, 1992).² Yu, X. (1997) conducts that strategic management accounting not only must pay attention to provide external environment information for decision making, but also need to evaluate the situation of globally competitive strategy correctly.³ The other definition is given by the IMA (Institute of Management Accountant in the USA 1998): strategic management accounting is an accounting model as follows: in the conception of strategic management accounting, decision makers pay attention to non-financial information and traditional financial information, and they must pay attention to the information about external factors of a firm as well. But there is no a concept which can cover strategic cost management and E-supply chain.

In additional, in cost management, there are new demands upon the increasing complexity of inter-firm cost management in E-supply chains. Yet, despite the increasing interest in inter-firm cost management and coordinating beyond the firm boundaries and their potential implications for the field of management accounting, the topic has been largely ignored in the accounting research literature (Hopwood, 1996; Van der Meer-Kooistra and Vosselman, 2000). In this paper, I seek to address this limitation by exploring the theoretical basis, framework model and some application method in the research on strategic cost management in E-supply chain. Especially, the main purposes of this study are:

1. To extend the E-supply chain and value chain to the Cyber-value chain.
2. To define the new concept: Cyber-value chain **coordination mechanism**.
3. To explore how to integrate the virtual value chain and real value chain into the cyber-value chain.

4. Based on the new concept – Cyber-value chain coordination mechanism, to build the framework model of strategic cost management in E-supply chain.
5. To develop some new synergic strategic cost management methods in E-supply chains to solve some emerging management accounting issues.

This paper is organized as follows. The introduction shed light to the background of strategic cost management in E-supply chain and the objectives of the study. Section 2 provides a brief literature review. Section 3 argues that a new theoretical basis for scientific research in strategic cost management is needed to meet the challenges of the fast changes in business firms and environments. Section 4 briefly analyzes the interaction in creating value from the virtual value chain and real value chain in the cyber-value chain. The fifth section discloses several main problems in E-supply chain, and what are the positions of these problems in strategic cost management. The sixth section designs an E-supply chain strategic cost management framework based on the coordination mechanism of cyber-value chain. The seventh section conducts some synergic management methods in E-supply chain strategic cost management. Finally, the last section concludes the main contributions of this paper and some research directions in the future.

Literature Review

Strategic cost management, in theoretical framework, methods and contents, compare with traditional cost management, is more challenging and systematic. But, whether the school theory research can go into practice depends on how to develop an accounting model from strategic cost management and on how to apply the model to enhance the competitive capacity of the specific company. Recent proliferation of papers on strategic cost management and supply chain management related topics explain the increasing interest of researchers for this area. This paper draws upon three research main streams to define the scope of this review.

Shank Research Main Stream

Based on the concept of Porter, M. (1980) “competitive advantage”, Shank (1992)⁴ develops the Shank model of strategic cost management. This model provides a series of analysis methods which could insight into strategic management. These analysis methods are strategic value chain analysis, strategic position analysis and strategic cost driver analysis. The three methods unite a close relation in logic. First, company must analyze the sources of cost and understand the structure of product cost on strategic management view. Second, company carry on strategic position analysis of three aspects in accordance with its products, industry and market, and determine whether company should take the lower cost strategy or should take the product differentiation strategy. Thus,

company should choose a suitable cost management approach to match the competitive strategy. Thirdly, after having determined the competitive strategy, company should carry on cost driver analysis to find out what factors induce cost change, and seek reducing cost strategic approach reducing cost to match the specific competitive strategy of the specific company. Moreover, Ward (1992) emphasized that strategic management accounting not only provides decision information for competitive strategy management, but also should be extended to the period strategy accounting (product period: development stage, growth stage, mature stage and decline stage). Tomkins and Carr's (1996) model of strategic investment (which draws upon work by Shank and Govindarajan (1992, 1994)) provides an important linkage among strategy formulation, value chain analysis, and cost driver analysis. Anderson (2006) argue that strategic cost management research must be extended from the executional cost management to structural cost management.

Cooper & Slagmulder Research Main Stream

Professor Robin Cooper is one of ABC (Activity Base Costing) initiators. He and His coworker conduct the strategic cost management model (Cooper and Slagmulder (1998a-1998d) in a series of articles about "Management Accounting". The key idea of this model is to apply ABC to the strategic management. He believes that ABC should be the applicable for strategic management, such as to build the optimal strategy and to provide all services for the strategic program implementation. Furthermore, Cooper and Slagmulder (1998a) argued that strategic cost management is "the application of cost management techniques so that they simultaneously improve the strategic position of a firm and reduce costs". Those research results attempt to derive the relations between a firm's strategy, cost structure, and the causal relation between activity levels and the resources that are required (i.e., "cost drivers"). Similar research results are achieved by Anderson (1995), Banker and Johnston (1993), Ittner et al. (1997), Maher and Marais (1998). Furthermore, Cooper and Slagmulder (1998b, 1998c, 1998d) extended strategic cost management of an intra-firm to the strategic cost management beyond the boundaries of the firm, and Cooper and Slagmulder (2004) explore the strategic cost management techniques that cross the organizational boundary between buyers and suppliers and to realize their objective which is to reduce costs through collaborative efforts. We think that the paper of Cooper and Slagmulder (2004) is an innovation result of frontier research topic in strategic cost management.

Kaplan Research Main Stream

A third stream of this review is Kaplan and Norton's (1996, 2004) work. It highlights how firm-level strategy and constituent business level strategies are

linked to performance measures through an integrated performance management process. Kaplan and Norton (1996) extend the cost management to performance management in four perspectives (financial, customer, internal processes, learning and growth). An important feature of their models is introducing the metrics of performance as defined by multiple stakeholders (i.e., employees, suppliers, alliance partners, customers, shareholders, governments and society at large). Furthermore, Kaplan and Norton (2004) build architecture of cause and effect by linking the four perspectives, where a strategy map is developed to force an organization to clarify the logic of how to create value and for whom. Their recent book (Kaplan and Norton, 2006): *Alignment: Using the Balanced Scorecard to Create Corporate Synergies*, shows that how the whole organization can be aligned vertically and horizontally by executing fully strategy performance management.

Kaplan research stream extend the strategic cost management to strategic performance management of four perspectives, but they do not consider extra-firm cost management in E-supply chain. Therefore, we argue that the firm can not enjoy long-term sustainable profits unless all critical stakeholders enjoy adequate returns (financial or otherwise) while participating in E-supply chains as compared to their alternative opportunities. Thus strategic cost management demands that the firm spend cost as little as possible to achieve the financial objective, but create value as much as needed to meet the desired result of all key stakeholders in E-supply chain. Our research in this field further discovers that many opportunities for optimizing the cost structure of the enterprise lie at the firm boundaries and beyond the firm boundaries. Together these propositions mean that strategic cost management must extend the firm's current cost management to more distant future periods and beyond the firm boundaries.

According to the three research main streams mentioned above, we argue that strategic cost management in E-supply chain lacks a general conceptual framework model. This conclusion similar to that Tomkins and Carr (1996) concluded that strategic management accounting lacks a general conceptual framework, and Roslender and Hart (2003) conclude that there is still little agreement about what constitutes "strategic management accounting".

Based on above literature review, we can argue that much of what constitutes modern cost management is mainly depended on the choices about organizational strategy and inter-firm cost structure. In agreement with Cooper and Slagmulder's (2004) findings, we think that these choices, which are often taken by general managers rather than cost accountants, typically have not been studied by traditional management accounting.

Thus, this paper seeks a theoretical basis of the framework (system) of strategic cost management in E-supply chain, and provides the readers with new

comprehensive views about strategic cost management accounting such as Cooper and Slagmulder (2004) and Anderson (2006).

The Theoretical Basis of Strategic Cost Management in E-supply Chain: Cyber-value Chain Coordination Mechanism

In the 1990s, E-commerce, E-fund transfer, high speed data communication techniques and computer decision support systems have been applied to cost management, E-supply chain management and extended the terminal users of E-supply chain to customers and suppliers. In such environment, could you find a new integrated value chain which can cover value chain (virtual and real), E-supply chain, and value network and so on? Is there a new coordinating mechanism to support and explain the strategic cost management? We try to answer these two main problems in this section.

E-supply Chains and Cyber-value Chains

In the internet environment, Ma⁵ (2000) conducts that supply chain is a model of network chain structure, which is the integrating control of the information flows, goods flows and fund flows in firm chain. And the model integrates raw material purchasing, product manufacturing, marketing and distribution, supplier, manufacturer, distributor and customer into a network system model. In another word, in this case, integrate supply chain and internet application into one integrated system. We call this the E-supply chain.

In recent years, the management practices of E-supply chain have been developed to the relationship of long term cooperation in all alliance firms and beyond some simple economic activities of the short term cooperation in some firms of supply chain in the past, and integrated network information system into E-commerce so that supply chain management has become a management methodological system of E-supply chain from the simple activity management tool of supply chain⁶. Furthermore, there are many new concepts, such as E-supply chain, virtual value chain, value network, and so on. However, our researches in the field need a synthesis concept that could cover above those new concepts. Thus, this paper proposes a new synthesis concept – cyber-value chain, which refers to the integration of all business processes (including virtual processes) from end users through original suppliers that provide products, services, and information that add value for customers and other stakeholders in the E-supply chain.

We can infer that this new concept includes value chain, virtual value chain, supply chain and E-supply chain from the definition of cyber-value chain. Based

on this synthesis concept, it is easy for us to study what the strategic cost management model of E-supply chain will be beyond the limitation of single firm. The synthesis concept puts emphasis on combining single firm strategies with E-supply chain strategies, and then sets up a decision support system for top management team either in the core firm or in a coordinating group with their financial information and non-financial information, so that the strategic goal of the core firm and the competitive advantage of the E-supply chain can be achieved.

Cyber-value Chain as the Object Of Strategic Cost Management

The object of traditional management accounting is the internal cash flow in an economical entity, but it greatly depends on internal financial information and is limited to the internal cash flow of a firm. In cyber-value flow, the cash flow is only one tree of a forest (value flow). For example, continuously stable profit comes from the competitive position of a firm and the contribution of other firms in E-supply chains. Thus, we must pay closer attention to the strategic information in E-supply chain. However, few firms make use of the strategic information in the internal management reports. Business market is like the battle field. If only your firm should master the related information about your competitive opponents and the external environment, your firm will lead in the competitive business. Therefore, since strategic management accounting serves in strategic management, its object must not be limited to the internal cash flow, but must include various value flows in strategic decisions and strategic implementations. Furthermore, cyber-value chain includes not only internal value flows but also external value flows and related information, such as national industry policies, product market status, the situation of competitive opponent, value flow information and non-financial information.

The Development of Traditional Market Mechanism and Company Hierarchical Mechanism: Cyber-value Chain Coordinating Mechanism

Based on transaction cost theory, Malone (1987) advances an e-market transaction theory. The theory is the development of the transaction theory of Coase (1937) and Williamson (1975), could the theory be applied to analyze and solve problems of firm's internal transaction in a firm and external problems in E-supply chain? The transaction cost Theory of Williamson (1975), which is the development of the transaction cost theory, consists of two organizational mechanisms: One is organization hierarchical mechanism. That is, by building an organization hierarchical structure, a firm can bring all activities to the internal hierarchical structure and make activities done more effectively by all hierarchical managers' decision making. The other one is market mechanism, that is, by executing external transaction, a firm can form market relationship with other companies under market regularity and price law in the market.

What mechanism a firm will choose depends on the cost in market transaction or internal production and the cost-effect of producing scale economic from internal production or from outsourcing.

Malone and Benjamin (1987) think that because IT makes market mechanism and company hierarchical mechanism done with higher efficiency and lower market transaction cost, the economical coordination and governance structure based on E-supply chain is superior to that of traditional market. Thus, a famous e-market hypothesis is brought about: the coordination of economic activity would preferably choose the model of market coordination which turns out to be the better trend of market mechanism. There are two important evidences: one is to extend the sale scope of products and to reduce the transaction cost by breaking through the block of time and space; the other one is to reduce the coordination cost.

In fact, the two theoretical evidences mentioned above also stems from forming a cyber-value chain system. Thus, I believe that cyber-value chain will become a new hot topic of theoretical research in management science. Furthermore, there are two other facts to support my viewpoint. One fact is that, in the internet environment, if firm's value chain is extended to the cyber-value chain which integrates E-supply chain, value flow, virtual value chain, value network and intellectual capital into one value system. The firm must need a new coordinating mechanism to manage the cyber-value chain (including E-supply chain). The other one fact is that, with the theoretical research development of E-supply chain management, the new theoretical basis (cyber-value chain coordinating mechanism) will play a key role in the studies of E-supply chain strategic cost management. In summary, cyber-value chain coordinating mechanism is one inter-firm governance structure and inter-firm management system in cyber-value chain.

Hence, we can infer that cyber-value chain coordinating mechanism will be a new concept in cost management science. This new mechanism is different from the market mechanism and company hierarchical mechanism, as it is more effective and efficient.

The Explanation Power of Extra-firms Cost Management in E-supply Chain by Cyber-value Chain Coordinating Mechanism

With the development of IT application and E-supply chain implementation, economic activities have been highly diversified, so that we could promote the traditional network coordination theory to cyber-value chain coordination theory. Jarillo (1988) argues that by applying network coordination to its business processes, company could focus on its superior business processes and outsource the other business processes to other service firms. For participants of network cooperation, having mastered the high quality information and market knowledge

means that they can realize their dominant position in price negotiation in the specific products. Furthermore, outsourcing firms bear the lower cost of cooperation transformation in some activities, as they could adjust the cooperation partner based on their needs.

Powell (1990) describes that network model of organization is different from market mechanism and company hierarchical mechanism. Network model is more complex and more flexible than company hierarchical structure. Comparing with market mechanism, cyber-value chain coordination mechanism could provide firms with more chances of information communication, learning and integration, and we could get more much information from cyber-value chain than from market mechanism.

As firms concerning about strategic cost management upstream and downstream firms in E-supply chain, they develop relational contexts that do not fall into the simple dichotomy of markets and hierarchy (Williamson, 1975, 1979, 1985). Instead, these relationships represent intermediate or hybrid modes of governance that enable firms to access the economies of scale and scope of their trading partners in more efficient ways than are possible through either pure arm's length transactions or through vertical integration (Powell, 1990; Sheppard and Tuchinsky, 1996; Williamson, 1991). Many different forms of relational context between buyers and suppliers have been observed, ranging from relationships in which the interactions are close to market driven, to strategic partnerships in which the firms have signaled their desire to work together closely over the long-term (Heide and John, 1990). Thus, in E-supply chain, market mechanism, company hierarchical mechanism and cyber-value chain coordinating mechanism form a mutual connection network system which penetrates the business processes reengineering among these companies. It is very difficult for traditional market mechanism and hierarchical mechanism to answer the increasingly informatization and network integration. So we must promote the two tiered mechanism (including traditional market mechanism and company hierarchical mechanism) to the new three tiered mechanism (including traditional market mechanism and cyber-value chain mechanism and company hierarchical mechanism) in which we develop a new mechanism – cyber-value chain coordinating mechanism, on the purpose of improving the explanation power of the extra-firms cost management in cyber-value chain.

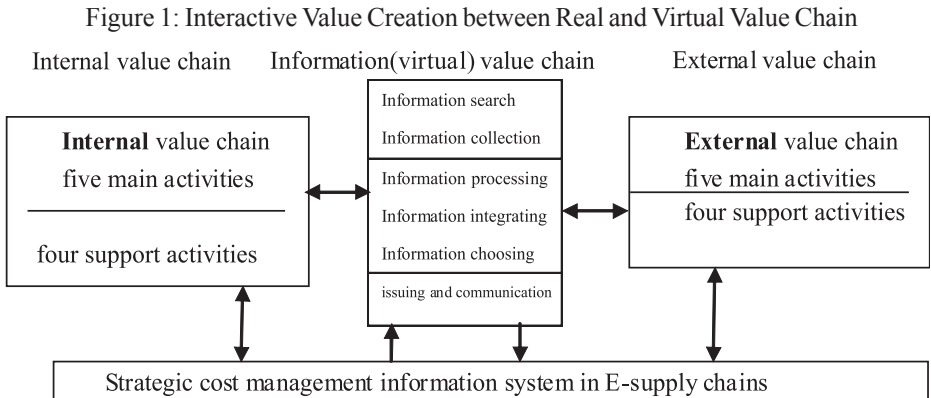
Integrating the Virtual Value Chain and Real Value Chain into One Cyber-value Chain

Value chain, a basic concept in this paper, is defined by strategic management professor Porter (1980). The value chain is a systematic approach to examine

the development of competitive advantage, and it consists of a series of activities that create and build value. There are two kinds of value chains: real value chain and virtual value chain. How to integrate two kinds of value chains is key problem to be solved in this section.

Interactive Value Creation Between Real and Virtual Value Chain

We put forward and develop an integration concept of information (virtual) value chain based on the virtual value chain of Rayport and Sviokla (1995). It clearly describes that information as an independently flowing resource in e-market activities, and information value chain includes information searching and collecting, organizing, choosing, processing, issuing and communicating. Information value chains have not only become a new process (model) of value creation, but also related with real value chain, and make some cycles of traditional value chain automated, so that there are more efficient and flexible activities and processes, and a firm can set up a new customer relation which provides the new value model for customers. The value creating process of interaction in real and virtual value chain is as the following Figure 1.



(Source: this paper)

As shown in the above figure, we can see that both internal and external chain in a company consist of five main activities (inbound logistics, manufacturing, sale and marketing, outbound logistics, customer service) and four support activities (infrastructure (including information system), human resources, technology support, purchasing), which connects with information value chain to form a value network. In the internet environment, the value network increasingly transform into a dynamic cyber-value chain. There are many interactions between virtual value chain and real value chain through the traditional market space and information space, which connect with other entity value chain to form a value

system and continuously interaction and optimization. For the market participants (including companies and customers), the value chain analysis has become main method to make E-supply chain strategies and to organize manufacturing and operations.

Forming strategic information on the basis of the virtual value chain analysis is the premise and foundation of the E-supply. The virtual value chain shows that information has become an independent force to create value in E-supply chain (e-market space). Information is a resource which could be reused, released, processed and shared utilization again and again, but it does not reduce its value, and sometimes increase its value on the contrary. Thus, information is a very important resource. Based on analyzing and building the virtual value chain and scientific programming, a company can form an efficient information strategy to realize the objectives of a company by directing and organizing the information resource which be processed, communicated and utilized.

To Integrate the Virtual Value Chain into Cyber-value Chain

In information virtual value chain, there are three key activities: communication and interaction with customers, cooperation and synergic activities with suppliers, real time connection with third party – market information service, intermediary service and transaction service. Thus, this paper argue that because each company is a node of market value chains system, a company in E-supply chain could apply all information resource through information virtual in network system (as in Figure 1). Therefore, it is obvious that developing the better relation between suppliers, customer and other entities by information virtual value is the key to keep companies more flexible and effective.

Furthermore, we discover that firm only using virtual value chain or real value chain to create value is not to keep its continuous development in the market, but that firm must apply Cyber-value chain which is the integration of real value chain and virtual value chain to maintain the firm's competitive position and profitability. In market activities, it is not enough for business organization to depend only on its limited resources, but a company must utilize all available resources to create its value. Thus, we emphasize that multi-firms cooperation could exchange knowledge, innovation idea and other information and use them to create value in larger scope. In cyber-value chains, on one hand, resources dependent company can apply information resource of the virtual value chain and other IT techniques to innovate and improve the internal operation mechanism, company culture, knowledge management, internal resource development, production and business processes optimization; on the other hand, if the internal real value chain of single economic entity organization is limited, or the efficiency and effectiveness of the organization are not good enough, a company can apply

information resource and cyber-value coordination mechanism to develop and utilize the external high-quality resources to create its added value. In this course, not only having a new process of value creation and utilizing virtual value chain, but also forming a value matrix and the virtualization of some cycles of real value chain, the core company can make E-supply chain have quick, flexible and effective activities, and build a kind of customer relation system and supplier management system and create value for customers and suppliers in new approach.

To be Solved Several Emerging Problems in Strategic Cost Management

The representative of the integrated value chain in cyber-value chain is the E-supply chain, which closely connect firm nodes with customers, so that every cycle in E-supply chain should be considered how to coordinate strategic cost management. Thus, there are several main problems to be considered as follows.

The Cost Management in Quick-response for Customer Needs

Quick response for customer can bring your products to market more quickly and secure your business prospects by helping your changing manufacturing arena in time. It will increase profitability by reducing non-value-added time (i.e. cost), cutting inventory cost and increasing return on investment. The objective of quick-response in marketing usually is to satisfy customer needs and to improve cost management and competitive capacity in market. Under the objective, every cycle which could create value in E-supply chain should be helpful for increasing the product value. In E-commerce circumstances, on the one part, customers could use the web homepage of the company's web homepage to take part in the product design, and to order customer-made personality product to satisfy specific needs. Meanwhile, customers can consult or complain about some products on line and then get response in real time. Moreover, customers also can take part in the discussion on web forum. On the other part, company could apply the count calculator to record the frequency of customer browsing in a specific product and could answer customers' question on line. However, main problems to be resolved by strategic cost management are how to utilize the real time feedback information that customers present in internet, and how to reflect and integrate those information to some measurement indicators and related value flows. Hence we could build the product design database model for strategic cost management, in order to service for developing and designing of product.

The Strategic Cost Control in Manufacturing and Design in E-supply Chain

In modern company, CAD (computer auxiliary design) and CAM (computer auxiliary manufacturing) and CIM (computer integrated manufacturing) are applied

to realize the production automation, and be introduced into JIT (Just-in-time) Production System to realize real time planning and controlling models – daily production plan detailing in every production section and JIT control in production processes. The integrated production system can get the zero inventory objectives, and realize that all workers take part in cost management. Thus, product line workers change professional operator into intelligent operator, and they can get those information about their every operation that impacted on the product cost and quality by intranet information system. At the same time, every worker also could present his or her rational suggestions about improving cost management and quality control, also could actively develop and utilize his or her capability on cost management. In this cycle, strategic cost managers pay more attention on how to keep the advantages on product techniques, the higher product quality and the lower product cost, could be presented by the following: 1) how to build value flow database and how to integrate production and product design database into this database system, so that strategic cost management system could use those information from the integrated database at all time; 2) how to realize real time analysis for activity cost in all production section; 3) how to execute strategic control in just in time, including product design, manufacturing processes improving and strategic position during entire product life under strategic cost controlling.

To Extend the Strategic Cost Control to all Activities in E-supply Chain

In the internet environment, company will completely utilize the co-shared advantage resource of E-supply chain and even put some cycles of the other company nodes of E-supply chain into a cyber-value chain, so that it meet the objectives:

1. To reduce the financial cost

In the e-commerce condition, company can quickly search the suitable raw materials from the suppliers' web homepage. Based on the online analysis information about raw material price and quality, the company can enrich the useful information about purchasing decision, and improve the negotiation capacity for purchasing price, so as to get the lower price of raw materials under certain quality guarantee.

2. To build a closely cooperative relation between purchaser (manufacturer) and supplier in developing and designing some products

Manufacturer and supplier make the product cost analysis and product design together, and take the product market risk for customer personality need, so that they could get shared benefit from the differential advantages of the product.

3. To seek the cooperation company that has the complementary resources

The relationship between a company and other companies is not purely competitive. Under guidance of strategic plan, the company analyzes the deficient resources in itself, and seeks the cooperation company possesses mutually complementary resources, all companies in E-supply chain can share the advantage of the resources so that these companies could reduce the cost and increase profit in maximum benefit under certain company resources and actual advantages

Real Time Control and Tracking Control in Distribution and Logistics

In the e-commerce condition , logistic and distribution and their tracking control have being an important cycle of E-supply chain, a company applies computer network and database management system to record every path of the product transfer from a place to the other places and its correspondence expenses in real time. How to apply these real time data and information to solve the problems: to coordinate and to control the direction and cost of product flow, and to report the status of customer goods flow, and to draw up the best route based on those statistic analysis data, are important problems of real time and tracking controls in E-supply chain management.

Management Control in Credit Management and Sale Service

Credit management has become an important management activity, and sale service is an important cycle of the strategy of satisfying customers' need. Of course, company must take full responsibility for solving all problems about credit and product services, but executing this responsibility being execute must pay some expenses. Thus, E-supply chain strategic cost management has to consider these problems: 1) to coordinate the relation between credit management, sale service and strategic objective; 2) to analyze the value of customer creation; 3) to utilize the resource of customer network and the resource of credit management system in synergic sharing.

Strategic Cost Management Implementation and Risk Management in E-supply Chain

As we know that everything is uncertain, in other words, everything has risk. Strategic cost management mainly studies the cost problems about company development in the long run, and must consider those risks in cost management at any moment. Usually, risk diversification is a common method in risk management. There are two models in risk diversification: one model is to choose one optimal investment portfolio by analyzing those projects in efficient investment portfolio;

the other one model is that extend a company to upstream nodes and to low-stream nodes in E-supply chain by approach of merger and acquisition or cooperation. Hence, the company realize mutually complementary in individual advantage, and diversifies its risks effectively. In the strategic program, there are two key basic premises in risk management decision: one is how to build up the management procedures of risk about important business activities and important investment projects, and in the strategic plan implementation; the other is how to apply risk management models and trade off strategic objective and risk return. Given the above two premises, decision makers could evaluate, test and analyze those alternative projects of investment and business operation processes, and could suitably control those risks, so that the investment projects and business activity plans of the strategic program could be implemented in accordance with the company's strategic objectives of the company.

Synergic Cost Management and Intellectual Assets Application

In the new economic age, intellectual assets has become a new production important element following the earlier three important elements – land, labor and capital. Thus how to utilize the resource of intellectual assets to create firm value in E-supply chains is a emerging key problems in our research. Strategic cost management, as a decision support system, should be able to provide the related information about intellectual assets to satisfy decision makers' needs, and then to realize the objective of strategic cost management. In strategic cost management accounting, the management core of intellectual assets is to encourage every people to make maximum contribution for creating value by efficient incentives in an organization. Furthermore, it is the most important thing for firms to make sufficient use of those different advantages of intellectual asset in different company nodes of E-supply chain to enhance the value of E-supply chain, and to attain the multi-win objective of E-supply chain for node companies.

E-supply Chain Strategic Cost Management Framework Model Based on the Cyber-value Chain Coordination Mechanism

In E-supply chain, because of the connection of company internal, company to company, and company to customer with computer network, keeping synchronously reflecting information flows, fund flows and goods flows, the strategic cost management system defined in this paper could provide more helpful information for strategic decision. How to build a strategic cost management model, which could solve the above mentioned problems, is a hard nut, but is key important research issue in this section.

Defining the Strategic Cost Management in E-supply Chain

Strategic cost management in E-supply chain is important to organizations because it is a philosophy, an attitude and a set of techniques to create more value at lower cost. The critical success factors for strategic cost management not only encompass financial factors, such as costs and revenues, but also non-financial factors that are like new product development, product quality, customer satisfaction. Therefore, the definition for strategic cost management in E-supply chain is a integrated cost management, which integrates cyber-value chain management system into strategic cost management system. It provides non-financial information, traditional financial information, and external information for decision maker in order to get the strategic goal and the competitive advantage of the core firm and node firms in the E-supply chain. Thus it builds a future new framework with four management functions:

1. Strategic management is such management activities which the company chooses its product lines, manufacturing methods, marketing techniques, and other issues of development in long run. Also it supports management decisions by identifying and measuring the cost and value of alternative decisions that potentially affect strategic objectives and operation plans in all parts of the organization.
2. Planning and decision-making in real value chain management and virtual value chain management like managing cash flow, budgeting, purchase of raw materials, production scheduling, pricing, and inter-firms cost management.
3. Management control and operational control in cyber-value chain to increase customer value by identifying opportunities to eliminate non-value adding practices and processes but reward and support effective managers.
4. To prepare financial statements not only for accurate purposes but also to comply with reporting requirements. These financial statements are mainly used by other three management functions.

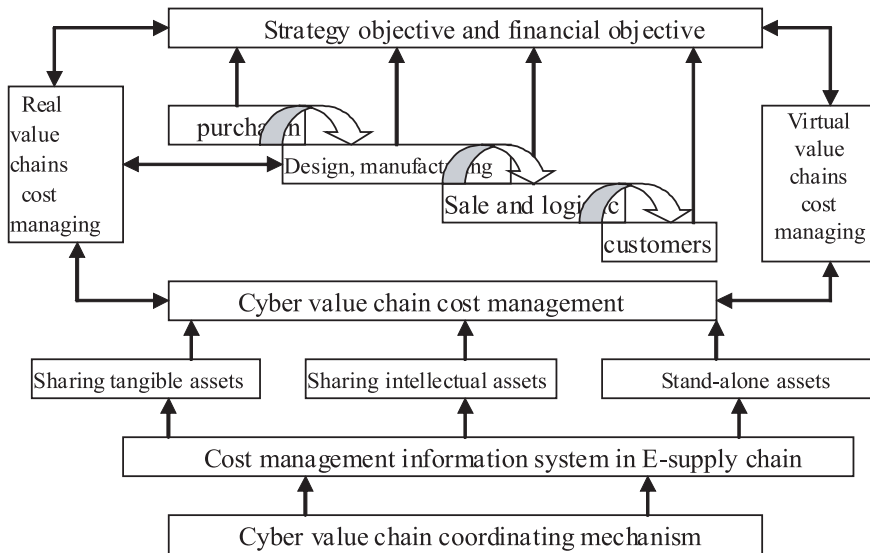
In this paper, we will focus on mentioned above seven problems in E-supply chain, and emphasize that internet and Cyber-value chain have a very important effect on strategic cost management that has been forgotten frequently: the coordination and integration aspects.

To Build the E-supply Chain Strategic Cost Management Framework Model

Through the definition of E-supply chain strategic cost management system and the description of current research steams in strategic cost management in the

section 2 of this paper, we can see that the research of the strategic cost management in E-supply chain is beyond the traditional management accounting research. Could we directly choose a suitable model from those current models of strategic cost management to satisfy our need in this paper? The answer is no. But, we can choose one model from current models and extend this specific chosen model to the model we need, of course, we could choose the model – strategic cost management based on Cyber-value chain – and extend it to the following model (see Figure 2).

Figure 2: The Framework Model of Strategic Cost Management System in E-supply Chain



(Source: this paper)

The description of the above model: based on the Cyber-value chain coordinating mechanism, taking the strategic objectives and financial objectives as basic goals of the system, taking the strategic plans as the action guidance of strategic cost management, and integrating virtual value chains and real value chains into an integrated system – Cyber-value chain cost management subsystem, which are utilizing all resources effectively and efficiently (tangible assets, intellectual assets, information etc.) in E-supply chain to create value for a specific firm. The system is emphasized that inter-firms cost synergic management and strategic cost management should match with strategic position of the specific firm. The system does not only pay attention to the cost drivers of a stand-alone company but also pay attention to the cost drivers of other node companies in E-supply chain and macro-economic policies, so that it make up the deficiency which the earlier

model of strategic cost management only consider those factors of single company. The system emphasizes that to set up an systematical connection between strategic objective (such as lower product cost strategy and product technique differentiation) and suppliers, company purchasing, design, manufacturing, sale, distribution and logistic, furthermore, to integrate financial management, accounting, risk management, information system and human resource management into the system of strategic cost management in E-supply chain (see Figure 2). Moreover, traditional standard cost, overall budgeting, pricing and cost analysis have become ones of the basic parts which are integrated into the system (including the real time control and management of logistic and fund flow, financial report and other decision information report, performance evaluation and incentive, strategy management decision support subsystem, and so on). Thus, the system emphasizes the cost synergic management for suppliers and customers. In the implementation course of strategic plan (program), of course, the company which chooses cost superiority strategy pays more attention to the cost control and management. That is, in strategic cost management of E-supply chain, company pays even more attention to business processes control and cost management matching with strategic objective and strategic position based on Cyber-value chain coordinating mechanism (see Figure 2).

The Basic Characteristics of E-supply Chain Strategic Cost Management System

Strategic cost management system of E-supply chain being a strategy decision support system, it goes beyond the traditional cost management, and is hoped to solve the complex problem which deal with multi-disciplines (strategy management, financial management, economics, supply chain management, system engineering, cost management system and computer application) synthesis application. In additional, it emphasizes information sharing and synergic management. This new strategic cost management system at least includes several subsystems (show in figure 2: each square frame is a subsystem), and its characteristics are simply described as follows.

1. Higher Degree Integrated

To integrate main activity subsystems (design, purchasing, manufacturing, sale, distribution and logistics, sale service) and supporting activity subsystem (financial management, accounting, information system, technique support and human resource management) into a synthesis system, see Figure 2, is the core part of strategic cost management in E-supply chain. Firms also could integrate popular CAD (computer auxiliary design), CAM (computer auxiliary manufacturing) and CIMS (computer integrated manufacturing system) into the synthesis system to realize the production automatic integration. This system could build database according to current application need, and map

this database to the value flow database. By applying the database to produce the specific decision information for real time analyzing and controlling the activity cost of all production stages and other business processes, to the system can discover the problems and to solve them in time.

2. Real Time Synergic Control beyond the Firm Boundary

Controlling and monitoring in the strategy implementation could be extended to upstream and lower stream in E-supply chain, and could be emphasized on matching with the company's strategic position. This paper argues that synergic control does not only pay attention to the cost control in micro-level (company internal), but also balance off the cost driver in mid-level (including up-stream and lower-stream of E-supply chain), so that the system could carry on all synergic monitoring and controlling for the entire course of strategy implementation. Comparing with cost control of traditional management accounting, real time synergic control pay more attention to control the external (mid-level) cost and to reduce every cycle cost in E-supply chain.

3. Quick-response in Market

The strategic cost management in E-supply chain could quickly respond to customer need, and improve the competitive capacity by satisfying customer requirement. Under the quick-response objective guidance, every activity of each cycle in E-supply chain which could create value could help to add value to the product. In the e-commerce environment customers could login the company's web-homepage to take part in product design and make some suggestions for product and sale service. The other one is competitive quick-response to make the company get competitive advantages in the long term. This competitive quick-response also is the main objective of strategic cost management, which determines that the system should be paying attention to the information of competitive opponents. Company should collect those information, such as pricing, cost, scale, and related information about market share ratio in order to analyze the competitive opponents. That external information is helpful for sensitivity analysis of sale price and adjusting the price in specific company, so that the company can increase the operation profit. Furthermore, some real time control decision can automatically make quick response to customers and competitive opponents by the system in accordance with pre-determined decision rules in the control application software.

4. Synergic Utilizing Intellectual Assets and Information Resource

Intellectual capital (sometimes call it as intellectual assets) has become the fourth production key element following the earlier three important elements – land, labor and capital, thus the information about intellectual capital value and its utilization status is what company stakeholders need. Company can apply intellectual to keep competitive advantage and continuously development

in long run. Therefore, when the company makes some strategies, the decision maker must consider the development in long run instead of the short term profit. In the informatization of the company, data is a kind of intellectual assets, and is very complex and very rich and colorful. To process a large amount of data into useful decision information, accountants and financial analyst possess well experience of using information and analyzing data, and they should become capable men (or women) who could using those data or information to create value for company stockholders.

5. JIT Performance Evaluation

The effectiveness of every activity done by us must be measured and evaluated, on which we can decide the performance and value of this activity. Similarly, in E-supply chain, it is very important that a company scientifically and fully analyzes and evaluates the performance in order to make supply chain develop well. In this paper, based on the characteristics of E-supply chain, we put forward that the performance evaluation of E-supply chain is not simply totaling each company performance in supply chain, but evaluating the overall operation performance and the JIT synergic relation between up-stream and lower-stream companies in E-supply chain.

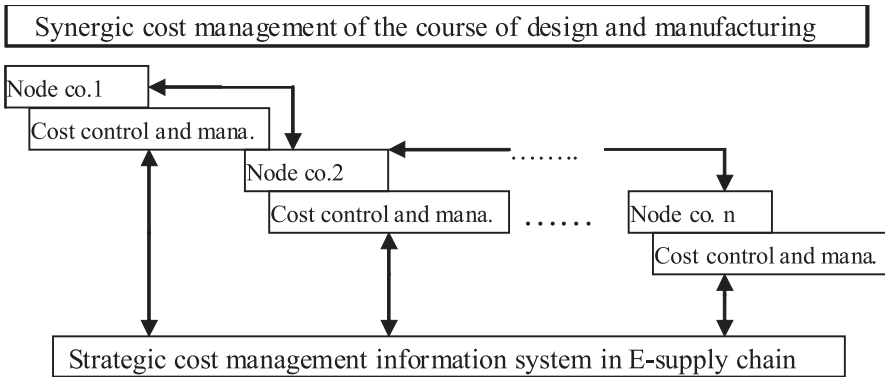
The Synergic Management Methods in E-supply Chain Strategic Cost Management

In the section six of this paper, the framework of strategic cost management system beyond the boundary of the core company, extend main strategic management processes to external node companies beyond core company boundary in order to seek the approach of reducing the cost of the entire E-supply chain. The Core Company and node companies can utilize sufficiently the synergic opportunity and synergic effect among partners of E-supply chains by means of coordinating the cost management projects between manufacturer and supplier.

Cost Information Co-shared Beyond the Company Boundary Promotes Synergic Cost Management

Figure 3 shows that the organic relationship between strategic management and cost management is very close, and the objective of E-supply chain cost management is to increase the competitive advantage, to reduce the cost, and to extend the cost control and management to the company external cost. Figure 3 shows that the core company of E-supply chain could promote synergic cost control and share cost management information to all node companies in E-supply chain. Moreover, it could emphasize the source cost information of the design

Figure 3: JIT Control and Management Beyond the Boundary of a Company



(Source: this paper)

course, such as the component cost of raw material, manufacturing processes and direct labor.

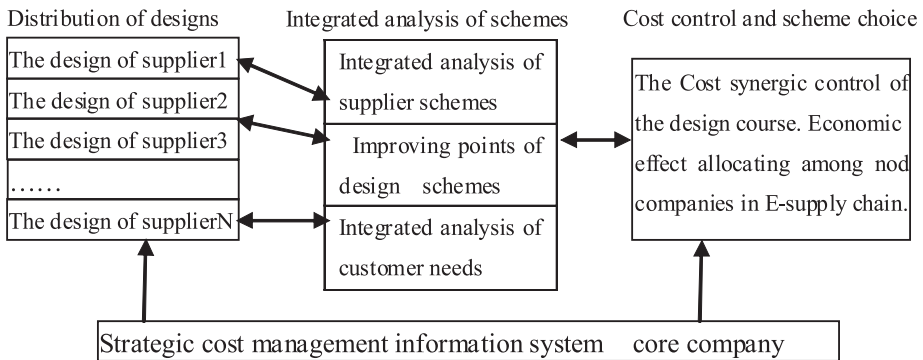
In addition, in the cost control course, besides paying attention to the information about cost drivers which can be measured in money, we must consider that non-financial information about the cost drivers. For example, in the course of product design, company must firstly trade off material quality and material cost in order to not only satisfies for the customers' need and product function and to achieve the objective of reducing the cost of the product. This cost information can be separated into three kinds of cost – supplier cost, manufacturer cost and customer cost – based on the cost driver, and these cost information can be further broken into product cost, raw material choosing cost, design cost, manufacturing cost, logistic cost, distribution cost and sale service cost. The core company of E-supply chain should set up a synthesis cost management information system beyond the company boundary to classify and process those cost information, and apply them to coordinate relevant synergic management activities. This cost control method is to control the cost of raw material production beyond the boundary of a company in just in time.

Emphasizing the Synergic Management on the Entire Course of Product Component Design Among Companies

In the past, companies usually only paid attention to those internal cost drivers in the design cycle itself, but company hardly considered to help suppliers to design product components. In order to improve the model of the traditional research and development of a product, this paper proposes to integrate the design distribution of product components, synthesis choice of design alternations and synergic cost control into a synergic design system based on strategic cost management

accounting system beyond the boundary of the core company (see Figure 4). In the product design project in E-supply chain, the core company should have a set of improving ideas for the basic framework of synergic cost control on design plans, design requirements, design techniques, product structure model and design processes (see Figure 4). Thus, in this subsystem (Figure 4), all design engineers of every company in the E-supply chain could use the information about product functions and quality which can satisfy customer requirement, reduce product cost and apply product cost synergic management, to decide the function scheme and cost structure of the product. Therefore, in the stage of product design, the synergic cost management beyond the company boundary requires all design teams (including core company and other related companies) cooperating closely to complete the design work of the specific product, on the purpose of getting the goal to seek the design project with better design scheme and the lower cost than any independent design scheme completed by single company. This new model design, in which multi-companies design teams can communicate and discuss the design scheme and decide the optimal product design scheme online in the system (Figure 4), on the purpose of satisfying customer requirements and attaining the multi-win objective.

Figure 4: The Cost Synergic Management of Product Components Design Beyond the Company Boundary



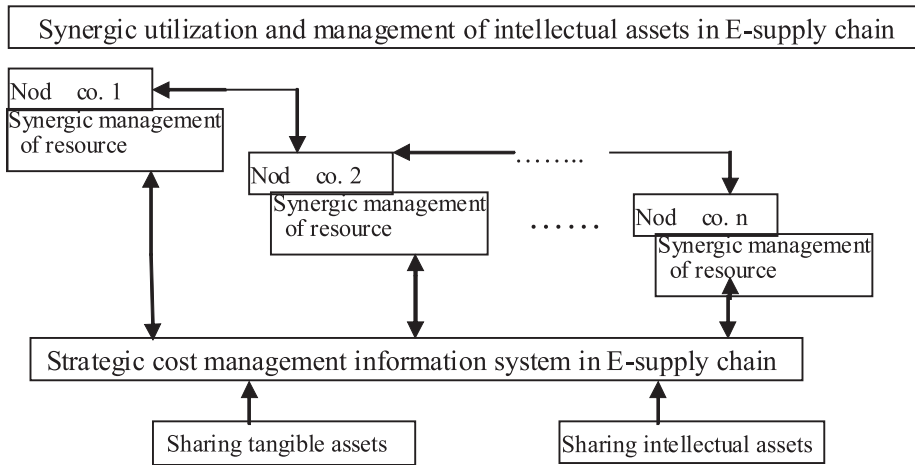
(Source: this paper)

Synergic Management Efficiency of Intellectual Assets

To seek the efficient synergic utilization approach of intellectual assets is one of the most important synergic management of asset resources beyond the company boundary, and is also a key management innovation to improve the capacity of creating firm value. In the internet era, synergic management core group can apply the strategic cost management information system in E-supply chain to the utilization course of intellectual assets to get multi-win objective, which includes customer network sharing, information sharing, advanced management system

methods utilizing, famous brand common using, and special techniques communicating and so on. For example, firm brand and information asset can create a great amount of value.

Figure 5: Synergic Utilization and Management of Intellectual Assets



(Source: this paper)

All different node companies could build and utilize one famous brand together, brand value generally show the differential price of the same product with different brand. Especially, when customers (purchasers) take the famous brand as product quality guarantee, a famous brand could create added value for the product with the brand. When one brand is very famous, other company with a usual brand may not create the added value and can not enhance the competitive power. The famous brand could attract more customers so as to realize more sales and to reduce the marketing cost. Thus the famous brand can make more profit for its company.

Information is one of the most important intellectual assets, which could directly influence the business behavior of the company and the response to the market. For example, Wal-Mart super-market alliance stores can make the product portfolio satisfy customers' needs and provide some loving care service for customers in accordance with the information about customers' consuming behavior and habit. The suppliers of the supply chain also could use the information to adjust their product mix for making more profit. American Wal-Mart super-market allied corporation have grown up from a small grocer store in the small town to the biggest super market corporation with revenue \$256 billion and profit 9 billion in 2003 in the world. Wal-Mart's global purchase strategy, distribution and logistic system, goods management, information system, and the every day lowest price

strategy are world's well-known successful business cases. Generally speaking, all successful strategies of the Wal-Mart is based on two key aspects: one is the successful IT application to set up a high speed information system; the other is to utilize sufficiently the information from the network information system, to maintain close ties between customers and suppliers, and to realize sharing the management innovation value. Therefore, Wal-Mart could create an amazing great amount of value from information assets.

The above-mentioned three methods could be applied to improve the competitive capacity and to solve those current problems of the cost management beyond company boundary, so as to show the positive effect of cyber-value chain coordinating mechanism.

Conclusions

There are four main contributions in this paper:

1. To put forward a new mechanism: cyber-value chain coordinating mechanism, which is thought as an intermediate mechanism lying between market mechanism and company hierarchical mechanism. This new coordinating mechanism is the theoretical basis of building strategic cost management system, and we can apply this theory to research and discover those deep issues of strategic cost management: quick-response to market, multi-companies synergic cost control and management, multi-companies coordinating the product design, synergic control of logistic and fund flow.
2. This paper argues that strategic cost management in E-supply chain must break through the firm boundary limitation and emphasizes combining single firm strategies with E-supply chain strategies, Besides, based on the financial set up a decision support framework for top management team from the core firm and coordinating group in E-supply chain management based on their financial and non-financial information in order to reach the core firm's strategic goal and the competitive advantage in E-supply chain.
3. Based on the concept of cyber-value chain coordinating mechanism and current model of strategy management, this paper put great emphasis on setting up a systematical relation between company strategic objective (such as cost advantage strategy and product technique differential strategy) and supplier groups and main cycles (including purchase, design, manufacturing, sale, distribution and logistic). It integrates real value chains and virtual value chains into cyber-value chain, and argues that decision makers should utilize all available resources effectively and efficiently in E-supply chains to create value for a specific firm.

4. This paper develops three main methods of strategic cost management accounting of E-supply chain. These methods, including sharing information beyond company boundary, the synergic management of the product design, synergic utilization and intellectual assets management, could be applied to improve the competitive capacity and to solve current problems of the cost management beyond company boundary, so as to show the positive effect of cyber-value chain coordinating mechanism.

We expect that the number of research paper in strategic cost management will increase significantly in the next years, given the increased interest in this research field by academicians and practitioners. Some directions for further research that this paper has identified are: (1) to study further theoretical framework on strategic cost management in E-supply chain; (2) to conduct empirical studies about the impact of Internet on strategic cost management; (3) to develop some decision models and technologies and to apply those decision models to the strategic cost management in E-supply chain.

Notes

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Appendix A:

Value chain: It consists of a series of activities that create and build value.

Supply chain: It is a model of network chain structure, which is the integration control of the information flows, goods flows and fund flows in firm chain. And the model integrates raw material purchasing, product manufacturing, marketing and distribution, supplier, manufacturer, distributor and customer into a network system model.

E-supply chain: It integrates supply chain and internet application into one integrated system.

Cyber-value chain: which refers to the integration of all business processes (including virtual processes) from end users through original suppliers that provides products, services, and information that add value for customers and other stakeholders in the E-supply chain. We can infer that this new concept including value chain, virtual value chain, supply chain and E-supply chain from the definition of cyber-value chain.

Virtual value chain. In this paper, virtual value chain is an information value chain. Everyone knows that information is a independently flowing resource chain in e-market activities, which include information searching and collecting, organizing, choosing, processing, issuing and communicating. Information value chains have not only become a new process (model) of value creation, but also relate with real value chain, and make some cycles of traditional value chain automated, so that there are more efficient and flexible activities and processes, and a firm can set up a new customer relation which provides the new value model for customers

Cyber-value chain coordinating mechanism is one inter-firm governance structure and inter-firm management system in cyber-value chain. We believe that cyber-value chain coordinating mechanism will be a new conception of management science because the new mechanism is different from and more effective and efficient than market mechanism and company hierarchical mechanism.

Strategic cost management in E-supply chain is a integrated cost management, which integrates cyber-value chain management system into strategic cost management system. It provides non-financial information, traditional financial information, non-financial information and external information for decision maker in order to get the strategic goal and the competitive advantage of the core firm and node firms in the E-supply chain.

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The **Asia-Pacific Management Accounting Association** (APMAA) was established in 2004 as an international academic organization with special focus on management accounting of the Asia-Pacific region. The proposal to form the Asian Management Accounting Association was first mooted at the convention of Asian Management Forum, which was held on 3rd and 4th November 2002 in Japan. Since that time, the participants from different countries continued to share the same vision of advancing management accounting research and practices with particular reference to the Asia-Pacific region. As a result, when the second convention, Asia-Pacific Management Accounting Forum was held on 24-25, November 2004 in Malaysia, it was unanimously decided that the time had arrived to establish the **Asia-Pacific Management Accounting Association** with two main objectives.

1. The objective of APMAA is to promote the advancement of management accounting theory and practices with particular reference to Asia-Pacific accounting issues.
2. For this purpose, APMAA shall undertake to organise forums and conferences, and the publication of the journal: *Asia-Pacific Journal of Management Accounting*.

The 3rd **Asia-Pacific Management Accounting Forum** was held in Fukuoka, Japan in March 30-31, 2006. The main theme of the Forum was *Present and Future of Management Accounting*. The forum attracted more than 40 participants from China, Korea, Japan, Malaysia, Singapore, Taiwan and Hong Kong. Professor Akira Nishimura, the President of Asia-Pacific Management Accounting Association (APMAA), gave the opening address. A total of 8 papers were presented, with topics ranging from theoretical and practical development of management accounting to corporate governance in the Asia-Pacific region.

The Steering Committee of APMAA held a meeting at the end of the Forum. One of the decisions made during the meeting was that the 4th Asia-Pacific Management Accounting Forum would be held in Chengdu, Sichuan Province, China sometime in mid-April, 2007.

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