

Supply Chain Management: A Business Centric Approach

Saumendra das, Prasant Kumar Padhy, K.Venugopal, Santosh Ranganath .N

Abstract: *Many research personnel's primary attention in the study of supply networks has focused on the product or transportation mechanism and also on the relevant information flows, much less central to the study of supply chain management and its inherent bond with cash flows. Networked organizations are receiving increasing attention in management literature because of their perceived success in terms of fast growth, increased flexibility and efficiency of operations, lower overhead costs, and effective competitive positioning. For all firms, the choice of which activities to perform internally and which to outsource is a critical issue. Cost information can play a fundamental role in the decision about how much "market" and how much "hierarchy." Indeed, outsourcing is, basically, a cost and benefits evaluation. Management accounting and strategic management studies have, so far, not addressed this perspective explicitly. Management accounting is too internally focused on the costs of the firm rather than the entire supply chain. The strategic management perspective, on the contrary, focuses its attention on the supply chain, but only deals very generally with those transaction costs which emerge while using the market. Both approaches fall short in providing a well articulated financial rationale for the segregation, which activities should be outsourced and which should be entrusted to the market. Neither approach does much to help managers understand where value is created in the value chain, nor the costs of the activities involved including their cost drivers. Cash Flow Management (CFM) studies provide a useful cost analysis framework which is too often missing in the strategic decision making process. Competitive analysis, value or supply chain mapping, and cost driver analysis are, in particular, the tools of CFM. This paper considers a number of central issues related to the study of this under-researched issue. Specifically, we raise the issues of cash flows and their cost as well as risk implications, explore the value that can be derived from optimizing and reorganizing cash flows, and consider the role of current banking services arrangements and their implications for change and improvement of cash flows in supply chain networks where both vertically integrated and network organizations exist. The financial impact arising because of the complexity involved in different organization models and its impact on profitability and competitive position is our main theme.*

KEY WORDS: *Multinational companies; Key resource area; Cash flow management; HP; SCOR and GSC*

I. INTRODUCTION:

Manuscript published on 30 August 2012.

* Correspondence Author (s)

Saumendra Das, Asst. Professor, Aditya Institute Of Technology & Management, Tekkali, Srikakulam Dist (A.P).

P.K Padhy, Professor, Department Of Business Administration, Berhampur University, Berhampur, Odisha.

K.Venugopal Faculty Member; Aditya Institute Of Technology & Management, Tekkali, Srikakulam Andhra.Pradesh.

Santosh Ranganath .N Faculty Member; Dr B.R. Ambedkar University, Etcherla, Srikakulam.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](http://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

The biggest management challenge in the new millennium of liberalization and globalization for a business is to serve and maintain good relationship with the customer. In the past producers took their customers for granted, because at that time the customers were not demanding nor had alternative source of supply or suppliers. But today there is a radical transformation. The changing business environment is characterized by economic liberalization, increasing competition, high consumer choice, demanding customer, more emphasis on quality and value of purchase etc. All these changes have made today's producer shift from traditional marketing to modern marketing. Modern marketing calls for more than developing a product, pricing it, promoting it and making it accessible to target customer. It demands building trust, a binding force and value added relationship with the customers. In this aspect, all models of supply chain management generally centre on goods / services and, to a limited extent, on the relevant information flows (Khanna, 1998). A central issue for all supply chain partners, however, is the cash flow that distributes financial resources common to virtually all business activities. Without such cash flows, individual supply chain partners would cease to function, and the coordination among such partners common in contemporary supply chains becomes impossible. Alternatives to cash flows such as bartering do not provide the flexibility necessary for the coordination and operation of the complex, geographically dispersed systems that form contemporary supply chains. In this paper we consider a number of issues that are central to a better understanding of the role and function of cash flows in supply chains (Lorenzoni & Fuller, 1995). We discuss the issue of cash flows and their cost as well as risk implications, consider the value proposition inherent in improving cash flows along the supply chain, and reflect on the role of current financial services providers and their implications for change and improvement to financial flow arrangements in global supply networks. The role of cash flows in existing supply chain models is often reduced to a step of order fulfillment operations or to cash-flow issues and the resulting financial implications for supply chain partners (Berger & Udell, 2005). Compared to the concrete treatment of operational and cost implications of financial arrangements along the supply chain, the issue of financial risk and their strategic implication for supply chain partners appears to receive very abstract recognition if it is addressed at all. The lack of focus on cash flows in the study of supply chain management reflects the history and disciplinary origins of the fields in logistics, management science, operations management, and so on.

There may be some confusion in relation to the term financial supply chain which refers to the supply chain for financial service organizations like banks or other financial institutions.

A significant amount of academic work has focused on the financial services sector, and empirical investigations of such financial services supply chains exist. However, our focus is not on the financial services sector rather on the cash flows along the supply chains of any industry. Such cash flows are an important phenomenon for a number of reasons (Kogut, 1991). First, they are the medium in which value is delivered from the end user of products and services back up the supply chain to all partners involved. Thus, cash flows are integral to every type of product or service driven supply chain. Any investigation that indicates options for how further value can be created by improved or changed financial flow arrangements is likely to have broad applicability for all supply chain interactions that involve trade and exchange across organizational boundaries. Second, institutional arrangements, legislative and regulatory requirements and financial compliance frameworks are important exogenous factors that, while substantially affecting the structures, processes, and interactions along the supply chain, are much less under the control of the supply chain partners than the relevant production, logistical, and informational arrangements. Finally, attempts to conceptualize, explain, and improve supply chain operations have traditionally focused on endogenous aspects such as production and logistical coordination, inter-organizational collaboration or informational integration. Optimizing cash flows has not featured centrally in any of the traditional supply chain models, and holistic, theoretical and empirical investigations of supply chains have at best only superficially dealt with cash flows, their arrangement, their institutional context, and their huge potential for improvement and additional value creation (Shank & Govindarajan, 1993). In this paper we place the cash flows along the supply chain at the centre of attention and some improvements of existing cash flow arrangements, from different technological support of such arrangements from different data.

II. OBJECTIVE OF THE STUDY:

- To study the current practices of Customer Relationship Management (CRM).
- To find out the impact of CRM on the profitability of the organization.
- To study the factors affecting the CRM practices.
- To study the role of cash flow and funds flow in CRM.
- To analyze the theories of firm and its application in business practices.

III. REVIEW OF RELATED LITERATURE:

In this present research, there are so many literatures have been observed to find out the problems related to supply chain management which revealed the basis of business viability of supply chain management. In this article basically, we concentrated on various aspects of cash flow in distribution in supply chain. In this present research, we have centered three main product-based supply chain models are HP, SCOR, and GSCM. The HP® model of supply chain management focuses on the actual products flow, arguing that all actors within the supply chain are interacting in an uncertain environment supported by multiple inventory stocking locations. This model does not consider cash flows as central elements of supply chains, nor does it emphasize the idea of cash flow as a variable of import for supply chain management. In a similar vein, the SCOR® model adopts a very detailed approach in depicting the process of product

flow from planning to delivery and with its explicit inclusion of possible returns, considers reverse flows, but does not provide a clear indication regarding the cash flows within the supply chain. Lastly, the GSCM® develops both a strategic and an operational perspective to each key business process which they identify within the supply chain. Here, the issue of cash flow is also central to the functioning of service supply chains, although there are only a limited number of models and studies available within such a framework. In their work on redesigning and managing the services supply chain, they have indicated cash flow as one of the key service process within the supply chain. In this model, cash flow is depicted as parallel or simultaneous to all other supply chain processes inclusively (Ask & Laseter, 1998). The authors, however, provide no clear specifications as regards to the actual management of cash flows. The only indication available for it is that payments are “made periodically based on performance” and that their exact timing and amount is to be determined by the people involved in the service delivery management. One consequence of this lack of proper specifications of the cash flow process is value leakage, which is evident from the fact that most Fortune 500 companies are overpaying nearly 5% of the contract value of the purchased services. Another treatment of the services supply chain, the IUE-SSC model, does not identify or discuss cash flows at all. Similarly, in their identification of key processes for increasing the performance of both product- and service-based supply chains, also do not take into consideration the role of cash flows (Atkinson, Banker, Kaplan and Young, 1997). Overall, the literature of supply chains in both product and service settings have largely failed to identify or discuss cash flows in any depth. While such flows are recognized as central for the management of individual firms as well as the aggregate impact on international trade development, their importance for multi-entity collaborative systems that are a contemporary product and service supply chains have curiously remained largely ignored.

A. Managerial Approach on SCM

Despite the continuing growth of the Supply Chain market, there is a consistent pattern outlining the need for development, marked by an increasing share of premature contract terminations and frequent dissatisfaction with the year-end financial results. However, insights into the reasons for the same are sparse. Supply chain management theorists and practitioners often stress the importance of aligning client and provider interests (e.g., through incentive contracts) to ensure organizational success. In contrast, we propose complex coordination and knowledge exchange across multiple collaborative inter-organizational relations between client and provider employees as a significant cause of failure – even if interests are aligned. We find that centralization of operations tends to be more complex in larger organizations, where there is heavier reliance on non-authoritative coordination and where production processes are knowledge or communication-intensive. We find that complications increase over-proportionally for international supply chains compared to domestic supply chains (Baltacioglu et al, 2007).

B. Academic Approach on SCM

Management of supply chains has a profound impact on an organization's viability in the marketplace and thus production output is directly linked to the internationalization on home and host country employment and thus subjecting the same to considerable academic research. The debate on the employment side of internationalization of Multi-national Corporations (MNC's) often contains an ideological bias against the supply chain operations of large MNC's, which leads to the fact that the whole debate is conducted in less precise language and focused on the short term effects. The debate on employment generation (linked to performance output) in host countries as a result of inward foreign direct investments that tends to focus on the qualitative spin-offs of this employment (skills, training, R&D), with relatively little attention to the numerical employment contribution of MNC's and not the circumstances under which these arise. On the other hand, the academic debate on the home country employment effects of internationalizing MNC's tend to be hijacked by two diametrically counter-poised claims (Carr & Ittner, 1992).

C. Operational, price and risk perspectives on cash flows in SCM

From an operations perspective traditionally adopted by supply chain management researchers, cash flows are seen as a routine, almost automatic corollary of product and service transmission within and across organizations. Their most important feature is the fact that they enable transmission of material, products, services, personnel, or information. The cost associated with them is also relevant, although it is not explicitly recognized in any of the primary supply chain management models. Dealing with the specifics of cash flows, and with their cost implications, is left to specialist functions such as financial managers and management accountants. From a financial perspective, however, the cost of any financial arrangements is a function of credit risk management teams: The higher the risk, the higher the cost (Sengupta, Heiser & Cook, 2006). Risk is important from an operational perspective as well. In this context it is the risk of disruptions of material, product or information flow that is considered, however, rather than the risk inherent in financial transactions. Attempts to use the differences in financial risk associated with different operational arrangements along the supply chain (e.g., different trading terms; different partners; different transport arrangements; etc.) rarely feature in supply chain management models. Such decisions are generally driven by operational concerns. In practice, different financial arrangements to exploit different risks such as reverse factoring (which exploits better credit ratings of large customers compared to small suppliers) are usually conceived of and driven by financial rather than by supply chain specialists. The benefits of optimized supply chains can, however, be used to create a better basis for financial risk assessments (Croxtton et al, 2001).

D. KRA's of cash flow process optimization and reorganization:

The cash flow processes itself can be optimized. Due to lack of technological and operational integration, lack of compatibility often between proprietary systems, a mistrust in technological security, and other reasons have prevented financial processes from being streamlined to the same degree that logistical and production processes have been in recent times (McNair, 1994). Most cash flows contain

information transmission characterized by an abundance of document and information verification, much of which is paper based and signature orientated with explicit and often duplicated sign off mechanisms. Internal reports from Intel® suggest that even simple payment transactions between supply chain partners can have as many as 27 touch points, utilizing several different information systems, with many individual steps still paper based and manually initiated or operated. The financial systems in use lack the transparency and compatibility to provide an actual or virtual single data source that can guarantee the integrity, safety and accuracy of the relevant data. At present, each touch point in cash flows generates its own information, which needs to be synchronized and verified again and again. While Service Oriented Architecture appears to offer solutions to the resulting process improvement challenges, such systems have not yet been delivered in practice (Demsetz, 1993). In this context, it is important to note that it does not simply remain an issue of more streamlined financial processes that lies at the heart of this challenge. Integration between the supply chain steering systems and the financial control and activity systems is also relevant and important. Both operational control and financial control rely on accurate data regarding the state of the value creation along the supply chain. Still, the command and control systems that monitor supply chains and track resource movements and value creation are typically not fully integrated with the systems that manage and control cash flows. In part, this may be a function of the different preoccupation of their designers and operators. While supply chain systems focus on purchasing, logistics, production, and marketing, among others, financial systems focus on credit rating, insurance, payment timing, credit control and other variables not of central interest to supply chain designers. The conceptual alignment of these systems is an area clearly requiring attention, with progress in this area possibly able to provide the impetus for closer integration in practice (Hennart, 1988).

E. The Cash Flow Management Perspective:

Cost Flow Management (CFM) is the view that cost analysis and cost management must be tackled broadly with explicit focus on the firm's strategic positioning, its overall value chain, and the full set of cost drivers for the firm.

F. Strategic Positioning:

For sustained profitability, any firm must be explicit about how it will compete. Competitive advantage in the marketplace ultimately derives from providing better customer value for equivalent cost (differentiation) or equivalent customer value for lower cost (low cost). Occasionally, in a few market niches, a company may achieve both cost leadership and superior value simultaneously, for awhile. Examples include IBM® in PCs in 1986 or Intel® in integrated Circuits in 1992. In general, shareholder value derives more clearly from differentiation, since the benefits of low cost are passed more often to customers than to shareholders (Lee & Billington, 1995).

G. Value chain analysis:

The Value Chain framework sees any business as a linked progression of value-creating activities, from basic raw material purchases through to end-use customers.



Each link in the chain is strategically relevant. Where in the chain is value generated and where destroyed? More broadly, each industry is also a linked chain with comparable issues about value creation and destruction at each stage. In carefully analyzing its internal value chain and the industry chain of which it is a part, a firm might discover that economic profits are earned in the downstream activities, such as distribution or customer service or financing, but not upstream in basic manufacturing. In such a case, any incremented resource allocation upstream would require very strong justification. Many businesses today are showing, for instance, that value is moving downstream in the chain. GE® and Coca Cola® have experienced the benefits of moving downstream. In the Indian auto industry, a very high percentage of overall margins are in after-market services such as leasing, insurance, rentals, and warranty repairs. New car dealers and auto manufacturing show low profit. But, at a deeper level, value chain analysis allows managers to better understand their activities in relation to their core competencies and to customer value. Many firms have discovered that activities are duplicated such that streamlining the chain can reduce costs and enhance the value provided to their customers (Hill & Hoskisson, 1987).

H. Cost driver analysis:

In CFM's framework, competitive advantage and effective supply chain management presume a good understanding of the causal factors which drive cost incurrence. Costs, indeed, are caused by many interrelated factors. Some factors are implicit in the firm's choices about its underlying economic structure (structural cost drivers). They include strategic choices concerning: scale (size of investment to be made in manufacturing, R&D, marketing areas), scope (degree of vertical integration), experience (number of times the firm has already done what it is doing again), technology (type of process technologies used at each step of the firm's value chain) and complexity (product or service line breadth). Structural cost components can be managed (up or down), but only by changing the fundamental economic elements of how the business competes. Such changes are far from easy to implement (Shank & Govindarajan, 1989). Also, in general, structural factors are not monotonically scaled. That is, one can have too much scale, or complexity, as well as too little. This makes optimization very tricky. Costs also are driven by the firm's ability to execute successfully within its given structure (executional drivers). In particular, executional cost drivers include work force involvement (commitment to improvement), total quality management (Kaizen and zero defects), capacity utilization, plant layout, product configuration, and linkages with customers and suppliers. In general, executional cost drivers are monotonically scaled, so that more is always better. Lower costs can be achieved either through redesigning the firm's value chain, reassessing the coherence of current activities compared with the customers' business requirements, reconfiguring the structural business model, or better executing within that model. In a recent study, one Italian agricultural machinery firm discovered that more than 50% of its activity costs (manufacturing, logistics, purchasing & inventory.) were driven by ineffective product configurations. An increasing variety of components and parts and low commitment to "design for manufacturability and assembly" adversely affected day-today performance as well as resource allocation. A major portion of these activities were non-value added, or worse, pure waste.

Reduced product configuration complexity, with concern for manufacturing issues, achieved dramatic profitability recovery (Ellram, Tate & Billington, 2004).

I. CFM and the networked organization – Implementing Supply Chain Management:

We believe that effective management of networked organizations requires effective cost management. The strategy literature as noted above, presents only the transaction costs framework to frame the make / buy choices. As noted, the TCE framework is conceptually solid, but limited in its practical implications. Management accounting literature reviewed presents only the incremental cost-benefit framework for make / buys choices. As noted here, this framework is limited in its practical implications, even when augmented with the ABC lens. We believe that CFM's framework can better support the analysis necessary for appropriate strategic choices about structuring the network. Indeed, in a defined strategic context – where the ways to reach a competitive edge are defined – value chain mapping combined with activity analysis and cost driver analysis can significantly increase the effectiveness of management's actions. SCM is a necessary supplement to either or both of the traditional approaches to the theoretical issues. Value chain mapping is necessary to identify where value is created along the activities performed in the chain. Managers who want to develop effective networked strategies must focus their scarce resources on value enhancing activities (Hergert & Morris, 1989). Partners should be entrusted with everything else. As we will reflect below, the most successful SCM firms are mainly focused on design, assembly, and marketing activities, using a network of suppliers to provide components. Effective networked strategies require appropriate cost driver analysis too. Structural cost drivers, such as economies of scope or scale can be managed through partnerships. Executional cost drivers related to customer and supplier linkages can be managed through better information exchange and process alignment. Electronic data interchange (EDI), for instance, can dramatically reduce management systems costs and other transaction costs by eliminating redundant and non-value adding activities. Co-design and co-engineering are planning and manufacturing issues that can reduce logistics and inventory costs, as well as manufacturing costs for all players along the chain. In particular, design for manufacturing, for quality, and for assembly can affect those executional cost drivers related to the cost of quality, unused capacity and product configuration (Shank & Silvi, 1999).

J. Price of risk factors – A statistical analysis (Frontier Analysis):

A firm is a technology by which all cash flows "cfst" related to the activities defining the firm as an economic entity are distributed over or transformed between different states and periods under constraints of different types,

$$t [(s, t), s \in \{1, 2, \dots, S\}, t \in \{1, 2, \dots, T\}]$$

such as technological, legal, or contractual. The transformation possibility frontier of firm j, that is, the envelope of all feasible vectors of cash flows, given the set Ω_t of its information at time t, can be represented as follows:

$$G_j(cf_{11}, \dots, cf_{st}, \dots, cf_{ST} | \Omega_t) = 0.$$

The firm modifies the vector of cash flows through changes in its portfolio of activities. The characteristics of the aggregate vector of cash flows lead to an evaluation of the firm by the financial markets. Given its “technology” represented by the function $G_j(\cdot)$, the firm chooses the mix of POM and RRM activities to reach the aggregate vector of cash flows that maximizes the value of the firm. Hence, the frontier $G_j(\cdot) = 0$ must be understood as a frontier in real terms, that is, emerging from the POM and RRM activities. We will see below how the financial risk management activities fit in this framework. We assume that there exists N factors of risk and that the firm’s cash flows are valued through a multifactor model. Hence expected cash flows at different periods are discounted at a rate of return given by :

$$ER_j = R_F + \sum_{i=1}^K \beta_{ji} (ER_i - R_F) \dots\dots(\text{Hyper line})$$

where ER_i is the return on risk factor or portfolio i . We assume that the factors have been orthogonalized so that their mutual covariance’s are zero. We also assume for simplicity and tractability a constant expected cash flows per period.

$$E_s(cf_{st}) = E_j \forall t$$

and an infinite number of periods. In such a case, the value of the firm is simply:

$$V_j = \frac{E_j}{ER_j}.$$

Expressed in terms of cash flows, the security market line or hyperplane takes the form:

$$E_j = V_j ER_j = V_j R_F + \sum_{i=1}^K V_j \beta_{ji} (ER_i - R_F),$$

(--iii123)

where $V_j \beta_{ji}$ is the measure of risk of the firm’s cash flows with respect to the i -th factor since

$$V_j \beta_{ji} = V_j \frac{COV(R_j, R_i)}{Var(R_i)} = \frac{COV(V_j R_j, R_i)}{Var(R_i)} = \frac{COV(cf_j, R_i)}{Var(R_i)} = \frac{COV(cf_j, R_i)}{\sigma_i^2}.$$

We can rewrite iii-123 as,

$$E_j = V_j R_F + \sum_{i=1}^N \rho_{ji} \sigma_j \left(\frac{ER_i - R_F}{\sigma_i} \right),$$

where σ_j measures the volatility of the firm’s cash flows. The value of the firm will depend, in this context, only on E_j and the scaled correlations $SCOR_{ji} = \rho_{ji} \sigma_j$ of the firm’s cash flows with the returns on the different risk factors. We can rewrite the efficiency frontier in terms of those variables, namely E_j and the N values $SCOR_{ji} \equiv \rho_{ji} \sigma_j$, which are, for the sake of valuing the firm, sufficient statistics of all the activities within the firm.⁷ The transformation possibility frontier can be rewritten in terms of E_j and the $SCOR_{ji}$, to obtain an analogue of the efficiency frontier $G_j(\cdot)$, as the envelope of all feasible points

$$(E_j, SCOR_{j1}, \dots, SCOR_{jN}),$$

This leads us to

$$H_j(E_j, SCOR_{j1}, \dots, SCOR_{jN}) = 0,$$

This is the representation of the firm’s technology we will work with. Defining the firm’s feasibility set in terms of the expected cash flows E_j and the N scaled correlation values $SCOR_{ji}$ has several advantages. First, it allows to measure the value of RRM and POM activities as moving the firm toward or along the frontier $H_j(\cdot) = 0$ in the $(E_j, SCOR_{j1}, \dots, SCOR_{jN})$ -space or dimensions. A change in the mix of POM and RRM activities will in general produce a change of value. Second, it allows a proper aggregation of risks at the firm level by establishing a functional relationship between the risk factors and the cash flows of the many activities or business units making up the firm. Identifying the risk factors that are common to the various business units or activities and accounting for the dependencies between them is an important function in the firm, which can fall under the responsibility of a central unit or delegated to the various units. Both organizational forms may result in an inefficient real risk management and choosing the better one is an important function of CEO, CRO and COO. Third, it allows viewing several activities of the firm such as value maximizing business strategies or mergers and acquisitions from a new perspective.

K. Increasing the value of the firm:

The value of the firm is generated by a mix of POM activities and RRM activities. Production and operations management is aim at maximizing the expected cash flows of the firm for given levels of risk measured by the scaled correlations of the firm’s cash flows with the returns on the different risk factors (Lorenzoni & Lipparini, 1999). Real risk management is aimed at minimizing such scaled correlations for a given level of expected cash flows, thereby contributing also the value of the firm. Hence, both groups of activities contribute to the overall objective of maximizing value. In this framework, the primary responsibility of higher level executives is to make sure that the firm’s decision making processes bring it not only on its frontier but also at the optimal point on that frontier (Fellenz & Brady, 2007). Let us assume for simplicity that there is a single risk factor, namely the market portfolio risk. We can write

$$E = V R_F + V \beta (ER_M - R_F) = V R_F + SCOR_M \left(\frac{ER_M - R_F}{\sigma_M} \right),$$

with $SCORM = \rho_M \sigma$. We can illustrate the problem of the firm in the space $(E, SCORM)$ as in Figure 1 where the straight lines are iso-value lines with their common slope being the market price of risk given by

$$\frac{E(R_M) - R_F}{\sigma_M}.$$

Each iso-value line represents the combinations of E and $SCORM$ which at the market price of risk would have the same value. The value increases in the north-west direction.

FIGURE 1
Cash Flows Transformation Possibility Frontier

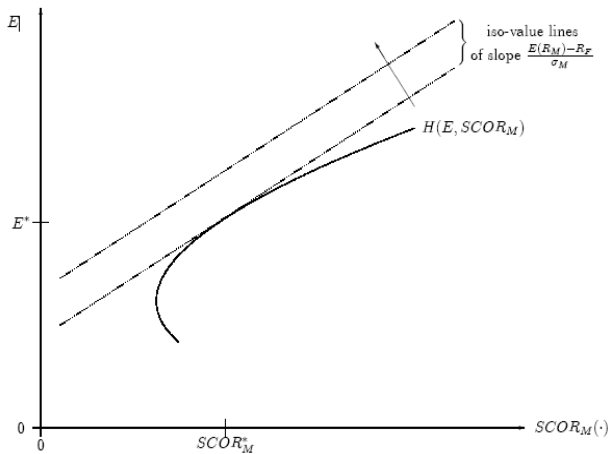
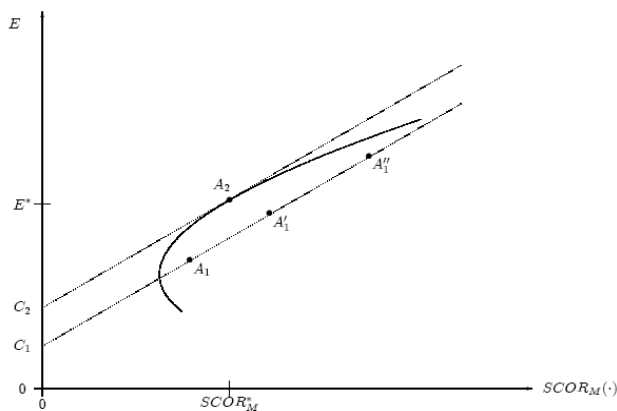


Figure 1: Frontier Analysis – Statistical Methods

The value V attached to a given iso-value line can be obtained as the intercept (i.e., the zero-correlation expected cash flow level), $C1$ or $C2$ in Figure 2, discounted at the risk-free rate R_F . Hence the value of the firm $V1$ corresponding to the iso-value line going through $A1$ is “ $C1/R_F$ ”. Along the iso-value line going through $A2$, the firm is worth “ $C2/R_F$ ”, which is greater than $C1/R_F$ ” since $C2 > C1$.

FIGURE 2
Value Maximization



The combination of expected cash flows and cash flow scaled correlation that maximizes the firm’s value is the combination at which the efficient frontier reaches the highest iso-value line.

For that combination (point $A2$ on Figure 2), the usual tangency condition holds:

Proposition 1: To maximize firm value, the rate at which a firm’s marginal rate of substitution between production and operations management (POM) and real risk management (RRM) activities (while remaining on its efficiency frontier) must be equal to the price of risk. In other words,

$$\frac{\partial(POM)}{\partial(RRM)} = - \frac{\partial E}{\partial SCOR_M(cf_j, R_M)} \Big|_{H(E, SCOR_M)=0} = \frac{E(R_M) - R_F}{\sigma_M}$$

At $A2$ in Figure 2, the firm cannot reduce its scaled correlation without reducing the expected cash flows. At point $A1$, however, it is possible to reduce the scaled correlation without affecting the expected cash flows because point $A1$ is not located on the efficient frontier. The firm’s POM and RRM strategies and policies are not efficient if they

bring it to a situation such as point $A1$. By better managing its real risk to reduce the scaled correlation of its cash flows and/or by better managing its operations to increase its expected cash flows, the firm is able to increase its value.

If there are two factors of risk ($N = 2$), then we have two prices of risk $[E(R1) - R_F] / \sigma_1$ and $[E(R2) - R_F] / \sigma_1$ and two scaled correlations of the firm’s cash flows with the returns on the risk factors, $SCOR1 = \rho_{j1}\sigma_j$ and $SCOR2 = \rho_{j2}\sigma_j$. The firm maximizes its value at the point of tangency between the efficient (hyper) frontier and the iso-value hyperplane.

$$\begin{aligned} - \frac{\partial E}{\partial SCOR_1(cf_j, R_1)} \Big|_{H(E, SCOR_1, SCOR_2)=0} &= \frac{E(R_1) - R_F}{\sigma_1} \\ - \frac{\partial E}{\partial SCOR_2(cf_j, R_2)} \Big|_{H(E, SCOR_1, SCOR_2)=0} &= \frac{E(R_2) - R_F}{\sigma_2} \\ \frac{\partial SCOR_2(cf_j, R_2)}{\partial SCOR_1(cf_j, R_1)} \Big|_{H(E, SCOR_1, SCOR_2)=0} &= \frac{E(R_1) - R_F}{E(R_2) - R_F} \frac{\sigma_2}{\sigma_1} \end{aligned}$$

IV. RESULTS & DISCUSSIONS:

In this paper we make a case for recognizing the importance of cash flows and propose of supply chain as a tool for better understanding the financial implications of networked organizations. We confirmed that networked organizations tend to create value not only for the local firms, but also for their “partners” along the extended value chain. The research also confirmed that in networked organizations, complexity is lower than in an integrated firm and argue that the issue of cash flows has not been given the attention it deserves by exact supply chain management models, and make the case that improvements to the financial flow arrangements along the supply chain are both possible and valuable. We recognize that any but the most incremental approaches to change are likely to meet intense resistance from vested interest among the financial service providers that benefit significantly from current, historically derived arrangements. Recognizing the importance of cash flows, and integrating them actively into conceptions and models of supply chains, offers significant value. We believe that further research into opportunities for process improvements regarding cash flows, into alternative ways of integrating them into supply chain operations, and into fundamentally new models for organizing financial arrangements along supply chains is necessary to develop the most efficient and effective supply chains in an increasingly globalized and networked world.

REFERENCES:

1. Ask J.A. and Laseter T.M. (1998), “Cost Modeling: a Foundation Purchasing Skill”, Strategy & Business, Booz Allen & Hamilton.
2. Atkinson A.A., Banker R.D., Kaplan R.S. and Young S.M. (1997), Management Accounting, Prentice Hall, Englewood Cliffs, N.J.
3. Baltacioglu, T., Ada, E., Kaplan, M.D., Yurt, O., and Kaplan, Y.C (2007), “A New Framework for Service Supply Chains,” The Service Industries Journal (27:2), pp. 105 – 124.
4. Berger, A.N., and Udell, G.F (2005) “A More Complete Conceptual Framework for Financing of Small and Medium Enterprises,” World Bank Policy Research Working Paper 3795.
5. Carr L.P. and Ittner C.D. (1992), “Measuring the Cost of Ownership”, Journal of Cost Management.



6. Croxton, K., Garcia-Dastugue, S., Lambert, D., and Rogers, D (2001), "The supply chain management processes," *International Journal of Logistics Management* (12), pp. 13-36.
7. Demsetz H. (1993), "The Theory of the Firm", Revisited, in O.E. Williamson and S.G. Winter (eds.), *The Nature of the Firm. Origins, Evolution, and Development*, Oxford University Press, New York.
8. Ellram, L., Tate, W., and Billington, C (2004), "Understanding and managing the services supply chain," *Journal of Supply Chain Management* (40), pp. 17-32.
9. Fellenz, M.R., and Brady, M. (2007), "Technology Deployment for Global Services Supply Networks: A Research Agenda," Working Paper, Centre for the Dynamics of Global Business Systems, TCD, Dublin, Ireland,
10. Hennart J.F. (1988), "Upstream Vertical Integration in the Aluminum and Tin Industry", *Journal of Economic Behavior and Organization*, vol. 9.
11. Hergert M. and Morris D. (1989), "Accounting Data for Value, Chain Analysis", *Strategic Management Journal*, Vol. 10.
12. Hill C.W.L. and Hoskisson R.E (1987), "Strategy and Structure in the Multi-product Firm", *Academy of Management Review*, vol. 12.
13. Khanna T. (1998), "The Scope of Alliances", *Organization Science*, May-June, Special Issue.29
14. Kogut, B. (1991), "Joint ventures and the option to expand and acquire", *Management Science*, 37, pp. 19-33.
15. Lee, H., and Billington, C (1995), "The evolution of supply-chain-management models and practice at Hewlett-Packard," *Interfaces* (25), pp. 42-63.
16. Lorenzoni G. and Baden Fuller C. (1995), "Creating a Strategic Center to Manage a Web of Partners", *California Management Review*, vol. 37, No 3.
17. Lorenzoni G. and Lipparini A (1999), "The leveraging of Inter-firm Relationships as a Distinctive Organizational Capability: A Longitudinal Analysis", *Strategic Management Journal*, Vol. 20, No 5.
18. McNair C.J. (1994), "The Profit Potential. Taking High Performance to the Bottom Line", Oliver Wight Publications Inc., Essex Junction, VT.
19. Sengupta, K., Heiser, D., and Cook, L (2006), "Manufacturing and service supply chain performance: A comparative analysis", *Journal of Supply Chain Management* (42), pp. 4-15.
20. Shank J.K. and Govindarajan V. (1993), "Strategic Cost Management: The New Tool for Competitive Advantage", The Free Press, New York, NY.
21. Shank J.K. and Govindarajan V. (1989), "Strategic Cost Analysis", Richard D. Irwin, Chapter 7.
22. Shank J.K. and R. Silvi (1999), "Strategic Cost Analysis for Profit Recovery: A Field Study", Working Paper, Babson College, Wellesley, MA.