

# Bringing Products To Market: Supply Chains Vs. Value Webs

Reginald M. Beal, (E-mail: Reginald.Beal@fam.u.edu), Florida A&M University  
Hudson Nwakanma, (E-mail: Hudson.Nwakanma@fam.u.edu), Florida A&M University

## ABSTRACT

*Companies scramble to satisfy ever-increasing customer demands for customized products, on-time delivery, and complete order fulfillment. Simultaneously, competition intensifies accompanied by revolutionary changes in the structure of distribution channels. Traditional supply chains are increasingly replaced by integrated supply chains, which, in turn, are challenged by leading-edge value webs. Managers are now faced with a strategic choice: supply chain or value web? Several situational factors – object of organizational focus (i.e., product or customer), type of product offered, target market strategy, organizational competencies, and resource constraints govern the decision.*

## INTRODUCTION

The 20<sup>th</sup> century witnessed significant change in the dominant form of industrial competition, particularly during the 1980s and 1990s. Individual firms began losing their status as the primary generators of economic value to supply chains, and competition between firms began shifting to competition between supply chains (Cavinato, 2002; Stonebraker and Afifi, 2004). Currently, several strategists contend that traditional supply chains are becoming obsolete and are, in turn, being replaced by value webs with competition being waged between value webs (Gossain and Kenworthy, 2000; Herman, 2002). Contrarily, we argue that traditional supply chains are not becoming obsolete rather their effectiveness and the effectiveness of value webs is contingent on the means by which customer value and satisfaction is created. Both supply chains and value webs consist of networks of firms but differences between them lie in the orientation and functioning of the networks and the basis of competitive advantage.

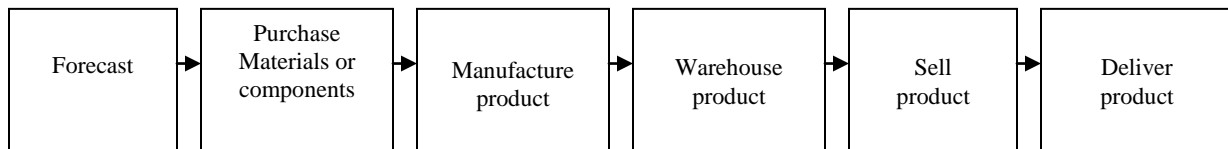
The purpose of this article is to contrast and compare traditional supply chains and value webs and specify situational factors that affect the applicability of each distribution network for bringing products to market. We begin by delineating the key features of each distribution network. We then present and discuss five situational factors (i.e., contingencies) and their variations which determine whether the traditional supply chain or the value web is the distribution network of strategic choice. Finally, we suggest the contingency variations under which each distribution network may be the preferred option.

## THE TRADITIONAL SUPPLY CHAIN

A traditional supply chain is a network of firms interacting in a linear fashion to produce, sell, and deliver a product or service to a predetermined market or market segment (Bowersox et al, 2002; Lummus et al, 1998; Simchi-Levi et al, 2003). Participating firms beginning with suppliers of raw materials/components and concluding with retailers/dealers or carriers are linked in a coordinated competitive network. In most of today's supply chains collaboration amongst participants is encouraged, however, most collaboration is geared towards helping the manufacturer increase production efficiencies and effectiveness (Bowersox et al, 2002; Stonebraker and Afifi, 2004). This traditional arrangement is found in a wide-range of industries from industrials (e.g., chemicals, oil, and automobiles) to pharmaceuticals including such major manufacturers as Dupont, Exxon, General Motors, and Pfizer, carriers - Federal Express, and UPS, and retailers – Wal-Mart, Home Depot, and Sears.

The traditional supply chain is driven by a Push supply chain strategy in which long-term forecasts of customer demand drives the flow of raw materials/components to delivery of a finished product to the end-user (Bowersox et al, 2002; Simchi-Levi et al, 2003). Push-based supply chains (Figure 1) are characterized by inaccurate forecasts resulting in oversupply or undersupply of raw materials/components, manufacturing inefficiencies, product overages or shortages, dissatisfied customers (participants) throughout the network as well as dissatisfied end-users. Since managers of each of the supply chain participants make decisions based on available information considerable lags can result between the time information is collected until it is processed and decisions made based upon it.

**Figure 1: Push-Based Supply Chain Model**



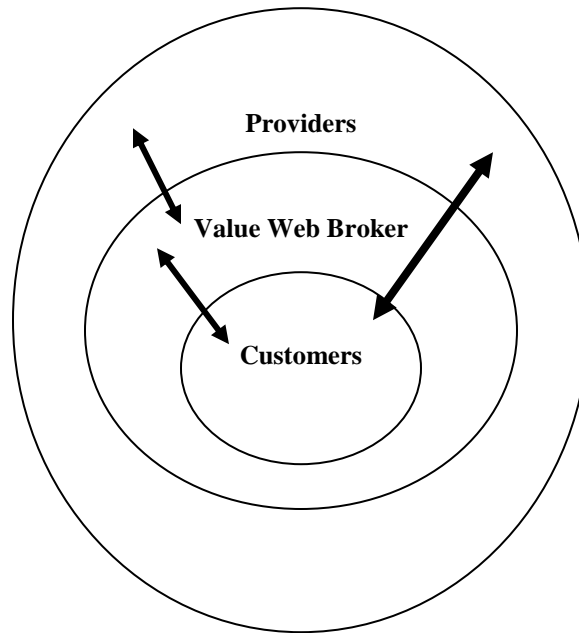
Typically, the primary objective of supply chain design is to minimize total costs while taking into account customer service requirements (Lummus et al, 1998). Although manufacturers as well as suppliers, wholesalers, and retailers are strongly motivated to reduce their inventories and operating costs (inventory, procurement, warehousing, transportation, and administration) in order to maximize their operating profits, forecasts anticipating the demand of the preceding participant in the chain and time lags in the flow of information within and between participants introduce inefficiencies, higher costs, and lower than expected operating profits (Fisher, 1997; Simchi-Levi et al, 2003). Moreover, customer demand and goods produced (i.e., supply) rarely match (Simchi-Levi et al, 2003). Salespersons continuously apologize to their customers for their firms' failures to deliver products on time and/or in the quantity ordered.

## THE VALUE WEB

A value web is a network in which customer needs are *simultaneously* connected to the procurement of raw materials or components, product manufacture or assembly, product delivery, and support services to achieve high levels of customer satisfaction and loyalty (Herman, 2002; Selz, 1999). Focus is on fulfilling real-time customer needs (Andrews and Hahn, 1998; Hui, 2004; Selz, 1999). Customers specify the features and other requirements of the product(s) (e.g., quantity, delivery time and date) they want using an information technology (IT) network linked directly to a value web broker. The value web broker, the creator of the value web, responds immediately by contacting the providers of products/services, components/raw materials, and transportation services required to meet the customer's needs (Selz, 1999). Overall results are customized products delivered on time, every time.

The constituents of a value web are end-users or final customers (hereafter, referred to as customers), a value web broker, and suppliers of products, raw materials or components, and transportation services (hereafter, referred to as providers) (Selz, 1999). Whereas a traditional supply chain forms around and is centered on a manufacturer or assembler, a value web coalesces around and centers on customers (Figure 2). The value web broker, forming the concentric circle surrounding customers, may also assemble or manufacture the products purchased by customers or may outsource manufacturing or assembly. Having established a cooperative relationship of mutual respect and trust with customers, the value web broker captures their specific choices and manages and coordinates the network of providers best able to satisfy customers' choices.

**Figure 2: The Value Web**



Providers, forming the outer circle, supply the raw materials/components, deliver finished products to customers, and assemble or manufacture finished products if the value web broker does not perform either of these functions (Selz, 1999). Providers are selected not only on their technical competencies and capabilities but also on their desire and ability to establish collaborative relationships.

The advent of online, real-time, interactive information technology (IT) is arguably the primary enabler of the value web (Gossain and Kenworthy, 2000; Simchi-Levi et al, 2003). The value web is built on its ability to use real-time information to create new values for customers and seamless integration of the product delivery system through the coordination of collaborative relationships. Prior to the advent of the aforementioned IT, supply chain participants were unable to obtain and share the information required for joint real-time planning between themselves and between themselves and customers (Bowersox et al, 2002). Also supply chain participants were not inclined to share such information with each other or with customers because the prevailing competitive business philosophy was to withhold information for fear of being taken advantage of in contract negotiations (Simchi-Levi et al, 2003). The feared result based on which party had the greater bargaining power was one of the participants paying higher prices than desired. Consequently, downstream and upstream participants tended to view each other as adversaries rather than as partners. This viewpoint also tended to prevail between customers and providers of goods and services. Several innovative, perceptive firms, many of them new ventures, recognized the potential of the new IT to change the extant paradigm, seized the opportunity, and introduced the response-based business model, the value web (Andrews and Hahn, 1998; Gourd, 1999). Dell, a leading computer company, Miller SGA, a subsidiary of office-furniture maker Herman Miller, and ETrade, an on-line financial services firm, exemplify firms exploiting the value web (Herman, 2002).

#### **DETERMINANTS OF THE DISTRIBUTION NETWORK OF CHOICE**

Several situational (or contingency) factors determine whether the traditional supply chain or the value web is the distribution network of strategic choice. The determinants include but are not limited to: object of primary organizational focus – product or customer, type of product offered, target market strategy, and competency and resource constraints (Fisher, 1997; Lummus et al, 1998; Stonebraker and Afifi, 2004; Selz, 1999). Based on these

determinants, in the following two sections we will first discuss when the traditional supply chain is the distribution network of choice then follow with an explanation of when the value web is preferred.

### **WHEN THE TRADITIONAL SUPPLY CHAIN IS THE NETWORK OF CHOICE**

A supply chain can be a highly effective distribution network when the focus is on and begins with the product – its invention, development, manufacture or assembly, and delivery to customers (Bowersox, 2002). Nike Corporation, an internationally renowned producer of new, innovative athletic shoes, exemplifies the effectiveness of the supply chain approach. Nike's philosophy, procedures and policies are designed to stimulate innovation as Nike considers its value added activities to be product design and marketing. Other key functions such as manufacturing are outsourced. Nike as a focal firm has established a formal hierarchical supply chain network as the enabler, and product innovation as the source of competitive advantage.

Several different methods based on different criteria are used in classifying products. For our purposes, the classification system positing two categories, differentiated (i.e., unique) products and commodity (i.e., standard) products, is most appropriate as these categories capture several distinctive product characteristics (e.g., use, longevity, cost, and price) (Fisher, 1997). Of the two types of products, commodities are best produced and distributed through the traditional supply chain. Reasons include the following: (1) the supply chain structure realizes a competitive advantage, economies of scale in the production and movement of large quantities of standardized products; (2) the primary focus of firms producing a commodity is on the product itself, the primary focus of supply chains, not on the customer, the primary focus of value webs; (3) the procurement of the raw materials/components used in producing a commodity takes place in competitive markets at the lowest price negating the need of the producer to form collaborative relationships with suppliers (Fisher, 1997).

The supply chain approach is advisable when the target market strategy is market segmentation. Market segmentation subdivides heterogeneous customers into homogeneous groups based on the similarity of needs rather than the preciseness of needs (Evans and Berman, 1992). The effectiveness of a market segmentation approach requires a high level of efficiency in the production and distribution of products. Economies of scale achieved by supply chains plays a major role in achieving efficiency.

The establishment of successful supply chains requires substantial finances, mass-production technology and facilities, demand and logistical forecasting systems, inventory management systems, and multi-firm relationship management (Bowersox et al, 2002; Simchi-Levi et al, 2003). Relationships must be managed from initial purchase of raw materials or components to the delivery of products to final customers or end-users. Collectively these resources and competencies are scarce and expensive creating competitive advantage for those firms possessing them (Bowersox et al, 2002). Thus, the best production/ distribution option for these firms is the traditional supply chain.

### **WHEN THE VALUE WEB IS THE NETWORK OF CHOICE**

The implementation of response-based business model in which products are manufactured or assembled and delivered to precise customer specifications is best carried out via the value web approach (Selz, 1999; Herman, 2002). In the response-based business model, primary organizational focus is on customers, satisfying their wants, desires, and needs – the essence of the marketing concept introduced over three decades ago. To identify and satisfy these requirements, close collaborative relationships characterized by mutual trust and respect dominate. Through the synchronization of the operations of suppliers, manufacturers or assemblers, carriers, and customers the value web delivers products in the quantity and of the quality desired, when and where desired. The effectiveness of the value web is exemplified by the inter-organizational network of suppliers and carriers, for example, Dell Computer Corporation, the world's fastest growing and most profitable assembler of personal computers. Dell's organizational culture, processes, and systems are dedicated to implementation of the marketing concept.

Differentiated products are products possessing unique attributes or innovative features for which customers are normally willing to pay a higher price than for competitive products. A subset of differentiated products is customized products (Fisher, 1997). Customized products are tailored to customers' precise specifications

(Swaminathan, 2001). Given the ability of customers to design their own products, the capability of the value web broker to capture those choices in real-time and manage and coordinate the activities of other providers, the value web is the ideal approach for developing, manufacturing/assembling customized products. The proliferation of value webs established by all the major personal computer assemblers, Dell, IBM, Compaq, Gateway, and Hewlett-Packard, to offer customized PCs substantiates the customizing capability of the value web.

The value web is the preferred approach when relationship marketing is the operative target market strategy. Relationship marketing is a non-traditional market segmentation strategy that emphasizes the targeting of individual customers, the development of mutually beneficial long-term relationships between a marketer and a customer or end-user, economies of scope rather than economies of scale, and computerized databases. The value web is endowed with these attributes and is thus aligned with relationship marketing. For example, Miller SGA, a value web broker and maker of customized office furniture, has established an enviable reputation for developing long-term, mutually beneficial relationships with its customers. The firm's manufacturing and delivery systems are aligned to satisfy the demands of customers seeking no-hassle direct communication with the manufacturer, office furniture built to their exact specifications, and fast, on-time delivery.

A real-time, digital, interactive information system is a vital component of a value web (Andrews and Hahn, 1998; Herman, 2002; Selz, 1999). While such systems are available in the marketplace and can be purchased by any firm that can afford them, the intangible, idiosyncratic know-how, embedded in the proprietary routines, procedures, and practices of customer-focused firms are extremely difficult, if not impossible, to acquire or duplicate (Simchi-Levi et al, 2003). Consequently, some firms are constrained by a lack of requisite resources from employing a value web approach. In addition, a vital competency needed to build a value web is the ability to establish and maintain collaborative relationships with network constituencies (suppliers and customers) (Simchi-Levi et al, 2003). Many organizations do not understand, appreciate, or are committed to the mechanics of how to make alliances or partnerships work. As with implementing the requisite IT system, the intangible, idiosyncratic know-how needed to establish mutually rewarding collaborative relationships is not readily or widely available. Thus firms possessing these assets reap competitive advantages.

## **CONCLUSION**

It seems as if every time a new business model is introduced prognosticators supporting the new model predict that the new entrant will soon, if not immediately, supplant the extant prevailing business model. The demise of the extant model and the rise of the new model are virtually guaranteed. And so it is with proponents of the value web trumpeting its superiority over and its replacement of the traditional supply chain. We respectfully disagree.

The viability and effectiveness of each of these two distribution networks is contingent on situational factors, specifically, object of organizational focus – product or customer, type of product offered, target market strategy, and competency and resource constraints. We assert that the traditional supply chain is apparently the most viable of the two options when (1) primary organizational focus is on the product; (2) a commodity product is the organization's offering; (3) segmentation is the target market strategy; and (4) network organizations possess the following resources and competencies – substantial finances, mass-production technology and facilities, demand and logistical forecasting systems, inventory management systems, and multi-firm relationship management. The supply chain achieves competitive advantage under these conditions. On the other hand, the value web appears to be the preferred option when (1) primary organizational focus is on the customer; (2) customized products are offered; (3) relationship marketing targeting individual customers is the target market strategy; (4) network organizations possess the following competencies and resources - a real-time, digital, interactive information system and collaborative relationships with network constituencies (suppliers and customers). We hope our paper proves helpful to practitioners and scholars as they investigate the most effective and efficient distribution networks for bringing products to market.

**REFERENCES**

1. Andrews, Philipp and Jerome Hahn (1998). Transforming Supply Chain into Value Webs, *Strategy & Leadership*, July-August, 26(3): 6-12.
2. Bowersox, Donald, David Gloss, and M. Bixby Cooper (2002). *Supply Chain Logistics Management*, Boston: McGraw Hill.
3. Cavinato, Joseph L (2002). What's Your Supply Chain Type? White paper, Institute for Supply Management.
4. Fisher, Marshall L. (1997). What is the Right Supply Chain for Your Product? *Harvard Business Review*, March-April: 105-116.
5. Gourd, Michael (1999). Value Driven Network Design, *Logistics, Spring/Summer*: 6-20.
6. Gossain, Sanjiv and Ranadal Kenworthy (2000). Winning in the Third Wave of e-Business – Beyond New Markets, *NerveWire*, December, 1-13.
7. Evans, Joel R. and Barry Berman (1992). *Marketing*, New York: Macmillan Publishing Company.
8. Herman, James (2002). Global Value Webs, *Supply Chain Management Review*, July/August: 30-37.
9. Normann Richard and Rafael Ramirez (1993). From Value Chain to Value Constellation: Designing Interactive Strategy, *Harvard Business Review*, July-August: 65-77.
10. Hui, Loi Teck (2004). Business Timeliness: The Intersections of Strategy and Operations Management, *International Journal of Operations & Production Management*, 24(6): 605-624.
11. Lummus, Rhonda R, Robert J. Vokurka, and Karen L Alber (1998). Strategic Supply Chain Planning, *Production and Inventory Management Journal*, Third Quarter: 49-58.
12. Selz, Dorian (1999). Value Webs: Emerging Forms of Fluid and Flexible Organizations, Unpublished Doctoral Dissertation, der Universitat St. Gallen.
13. Simchi-Levi, David, Phillip Kaminsky, and Edith Simchi-Levi (2003). *Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies*, Homewood, IL: Richard D. Erwin.
14. Smeltzer, Larry R (2002). The Five Immutable Laws of Universal Supply Chain Connectivity. Working paper, Arizona State University.
15. Stonebraker, Peter and Rasoul Afifi (2004). Toward a Contingency Theory of Supply Chain, *Management Decision*, 42(9): 1131-1144.
16. Swaminathan, Jayashanker (2001). Enabling Customization Using Standardized Operations, *California Management Review*, 43(3): 125-133.