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Organizational Engagement with Supply Chain Integration: Achieving a Tangible Strategy

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Abstract

Although supply chain management and supply chain integration have become topics found within today's organization as well as topics for researchers from various disciplines, little research has been completed concerning the linkage between business strategy, supply chain strategy, and the resulting decision which an organization makes to enter into an integration initiative. This paper discusses the experience of one organization in formulating a supply chain strategy consistent with its business strategy. The paper concludes with key elements driving the supply chain which emerge from this linkage, a framework for determining the importance of the supply chain to the organization, and a discussion of the benefits gained from creating a tangible incarnation, an enactment, of the firm's strategy.

Keywords: Supply chain integration; Strategy; Antecedents; Enactment

Introduction

The literature on supply chain management has long extolled the virtues to be gained by organizations seeking to integrate their supply chain. These gains include greater data and information visibility, leaner and more efficient processes, vendor managed inventories, and higher profitability. *Globalization* and *global supply chain operation*, and *supply chain visibility* have become buzzwords for organizations in recent years. Customers demand more data concerning shipping, especially as businesses attempt to move toward just-in-time inventory management or to incorporate lean philosophies into their firms' practices.

This lack of data, or lack of information visibility, is a problem for many firms who trade with multiple supply chain partners in multiple locations. Many of these companies lack the information technology infrastructure necessary to collect the information from partners. Hence, visibility should be one of the greatest benefits to emerge from supply chain integration.

Yet little exists in the literature in terms of exploring what has led organizations to engage in the long and often arduous journey to achieve this integration. Thus, this paper examines organization and operational factors which are antecedents to an organization's integration initiative decision. The choice of how to structure the organization's supply chain should hinge directly upon the organization's strategy. The business strategy dictates the amount and necessity of information and data visibility, and the extent to which actors within the organization can engage in partnerships with supply chain participants, or whether the supply chain exists merely as a means for bringing materials and resources into and out of the organization's storehouse. In effect, the supply chain itself becomes an enactment of the organization's strategic vision.

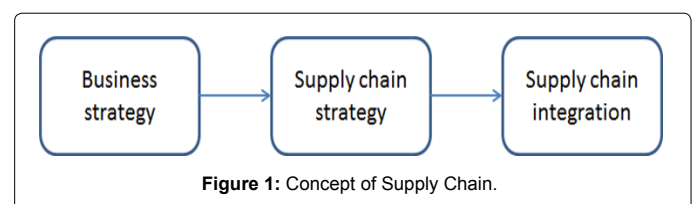
This paper proceeds as follows. We first review the literature concerning supply chain integration and mechanisms for supply chain integration. Next, we discuss the research methods, and later provide an overview of the pre-integration state of a sample organization, paying close attention to the difficulties the firm experienced as problems constantly arose in meeting both internal and customer expectations, and the organization's engagement with supply chain integration. The paper ends with the discussion and conclusion sections.

Literature Review

Figure 1 depicts the conceptual model that underlies our research on supply chain integration and its antecedents.

Supply chain integration

Many organizations are facing the necessity of integrating their supply chains with those of their suppliers and customers. Different perspectives such as information sharing, supply chain collaboration, and supply chain visibility have been used to understand and model supply chain integration. Researchers continue to explore fully the supply chain, highlighting its importance to organizational operations, organizational competitiveness, and the achievement of competitive advantage. In particular, numerous researchers have focused on supply chain collaboration, and the amount and type of data, information, and knowledge necessary to effect such collaboration [1] use a model to test the impact of variations of lead-time (longer versus shorter lead-times) upon fluctuations in demand, and thus, lead-time variability and its impact upon the bullwhip effect. Viswanathan, et al. [2] examined forecasting and planning among members of a multi-tier, or multi-echelon, supply chain. They developed a simulation which indicated that members of a supply chain are best able to forecast demand when



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calculations take into account the historical demand of their supply chain partners. Additionally, the authors examined a “synchronized inventory replenishment” scheme between suppliers and retailers, and determined that synchronized inventory replenishment (the case in which a supplier ships based upon a fixed order interval established by a retailer) can assist in lowering costs for the retailers.

Other ordering schemes are considered by other researchers. Choudhury, et al. [3] deploy a simulation to measure the value of information in a supply chain. They accomplish this under different conditions of known information. The researchers measure the difference between Retailer Managed Inventory (RMI) versus Traditional Information (TI) sharing, and between Vendor Managed Inventory (VMI) versus TI sharing. In their modeling both demand and inventory information was shared with the supplier. Their results indicate that VMI is most cost effective.

Different collaboration models are incorporated into some of the information sharing research. Kahn et al. [4] examine the supply chain from a collaborative planning, forecasting, and replenishment (CPFR) perspective, noting that the literature predicts that utilization of CPFR principles to manage demand have had positive impacts upon the organization. The authors focus, in particular, upon the information technology (IT) dimensions of collaboration, and how collaboration between supply chain partners can lead to the possibility of knowledge creation throughout the supply chain. Alternately, [5] use simulation to test a Collective Customer Collaboration (C3) system (entails a group of customers taking part in product design as well as committing to product purchase). Their simulation indicates that supply chain performance is boosted through the C3 system.

Much of the information sharing research has been undertaken against a knowledge management (KM) backdrop. To build supply chain excellence while maintaining flexibility, [6] note that some decision making may be possible among partners, even though the partners would be considered as autonomous firms outside of the supply chain context. Given the importance of these decisions, the authors utilize the KM perspective in encouraging managers to share information, and ultimately knowledge, throughout the supply chain. Wadhwa et al. [7] employ a KM perspective to explore and define Decision Knowledge Sharing (DKS) within the supply chain as a means to attaining greater performance.

The benefits to be gained from information sharing present a strong incentive for businesses to move toward integration. Benefits include efficiency and lower cost, an even flow of goods and services through the supply chain, and minimizing distortions caused by the bullwhip effect [8-12]. When higher levels of information are shared, the payoff from information sharing may extend far beyond a simple exchange of data. In addition, some researchers [13,14] propose an information sharing hierarchy. At the top of this hierarchy, not only is information shared within the supply chain, but financial performance is also impacted through.

Poirier [12] notes that today’s companies are devoting much energy and effort to teasing out the value that might otherwise remain hidden from sight in their supply chains. Yet, despite the benefits from integration and connectivity, this “passage to connectivity is not as smooth” as it is often portrayed [12]. Notwithstanding the body of work concerning various aspects of the supply chain and its behavior, there is little in the literature to draw upon when examining how companies prepare for integration and undertake supply chain integration activities.

Mechanisms for supply chain integration

There is much research available concerning the supply chain in its many aspects (i.e., VMI, bullwhip effect, integration, upstream versus downstream, and so forth), yet there is little research available concerning the antecedents of supply chain integration. Chen et al. [13] perform research aimed at testing a model of supply chain process integration (SCPI) capabilities [15]. Their research is aimed at a sample of managers drawn from manufacturers in Taiwan. They note that SCPI capabilities have a positive impact upon a firm’s performance with regard to supply chain management [16] examine the flexibility of firms in relation to demand driven supply chains, as flexibility has been shown to be a significant factor in firm performance in prior studies. Grover and Saeed [17] examine integrated supply chain systems (or, interorganizational systems) to gauge whether characteristics of the transaction itself are motivating factors pushing firms toward firms toward integration. Patnayakuni et al. [18] center their research among the types of information flows among partner organizations, i.e., formal and informal, as well as whether such flows require a longer time period to period to establish. Gattiker and Carter [19] look at ways in which project champions within an organization gain buy-in for interorganizational systems within their within their home organization. Seggie et al. [20] and Kim and Cavusgil [21] focus on chain integration as a means to impact the brand of a focal firm impact the brand of a focal firm. Braunscheidel and Suresh [22] on firm culture (through market orientation and learning orientation) in understanding supply chain agility.

Green et al. [23] look toward supply chain strategy as a driver of organizational and logistical performance. Hsu et al. [23] examine information sharing capability as it impacts firm performance and relationships which the firm engages in with partner organizations. Lawson et al. [25] view social social capital as a factor which impacts strategic relationships within the firm, as they construct a model of factors impacting performance performance improvement. Vickery et al. [26] examine the relationship between supply chain integration and firm variables such as customer service and financial performance.

These studies draw upon the importance of business strategy and supply chain strategy in informing their research. Yet, we are unable to find an abundance of studies which focus more specifically on the way in which an organization crafts its supply chain strategy to ensure that it is aligned with the firm’s business strategy. Hence, we focus in this paper on the work in which one firm engaged to carefully produce a supply chain strategy which was aligned with the goals and objectives of the business while also guarding against obsolescence in the future.

Research Methods

The supply chain integration project provided the researchers with an invaluable opportunity to conduct a longitudinal study of one firm’s experiences. The research which informs this article was completed via an interview protocol. A set of questions was drawn up in order to serve as an interview guide; these questions were semi-structured in nature, so as to give respondents ample opportunity for individual responses [27]. The interviewees were mid-level managers (six in number) who were involved in the project, both in the U.S., as well as in Asia. Each of the participants was interviewed in a one-on-one interview, where possible. In a couple of instances, a progress meeting spilled over into the lunch hour. In these instances, the questions were asked of

¹The company was promised anonymity in order to protect its competitive advantage. Thus, while XYZ Company exists, details of its identity have been changed. A portion of this agreement stipulates that details concerning respondents (interviewees) were to be omitted.

all respondents, and each respondent could choose whether or not to respond to the question. (We note that the company's legal team would not permit the researchers to reveal or discuss any individual's job title, or the nature of their particular position, as it was believed that doing so might compromise the company's competition situation).

Case Study

XYZ Company (XYZ)¹ is a multi-national company in a competitive industry. Although 2013 showed a decline in annual growth, growth and profitability over the next five years is predicted to rebound and continue on with a profitable trajectory, per an industry analysis retrieved from ibisworld.com. The nature of XYZ's industry is strongly tied to the strength of the national economy; as conditions within the United States as a whole increase, conditions for XYZ are expected to follow suit. And, while XYZ had strong, long-term connections to its supply chain partners, the age and operation of the supply chain had begun to show weaknesses which impacted the company and its ability to effectively and efficiently supply its customers.

Status prior to integration

Strategy: XYZ experienced considerable growth and recently expanded its production facilities and supply base worldwide. This growth has led to the opening of new plants not only in its U.S. base, but in Asia and Europe as well. With every expansion in a different geographic region, the company set up its supply chain operations to be supported largely by local suppliers. This resulted in the natural formation of various silos within XYZ that prevented it from having a holistic view of its operations across the enterprise. The company noticed that labor costs, over a five year period, had increased in China at an annual rate of about 20%, while the rate of increase in Mexico had been about 5%. Hence, the company needed to evaluate its supply chain and rethink its sourcing strategies to identify newer and more attractive manufacturing strategies. The company estimated that its logistics costs amounted to approximately \$US2 billion. Yet, more than half of these costs were due to "unknowns" in its supply chain. For example, when supplies would be interrupted, the company would need to quickly devise ways to overcome these shortfalls; thus order fulfillment and expediting expenditures amounted for a significant portion of this cost. The company realized that it needed to eliminate silos within the organization. One way they sought to achieve this goal was through integrating their own organization, and, by establishing electronic data exchanges throughout the company, they could begin to require that standardized data definitions be used throughout. As a result of their operations, XYZ lacked consistency of supply chain data and metrics that would enable evaluation of the supply chain and its effectiveness; their goal was to eliminate these issues.

XYZ faced an inability to conduct its operations in a seamless fashion, and found itself unable to escape mounting, frequent, premium freight charges paid to overcome inventory and materials shortages despite having received assurance of planned capacity fulfillment.

Information technology: The company used diverse production and planning systems that were designed mainly for communication with local suppliers. As a result, company and supplier communications exceed the communication capability of their present systems. The lack of information connectivity and visibility has cost millions in premium freight charges as well as other non-value-added activities. The enterprise resource planning (ERP) legacy system used by XYZ within its plants in the U.S., Thailand, China, and the Philippines has had several limitations that affect the way its suppliers communicate and respond to purchase order (PO) releases.

First, all PO releases remain open until the product is received by the purchasing plant. This means that releases remain open and visible on the supplier portal after shipment from the supplier. The status of releases has become an issue because releases that are in transit to the purchasing plant must be deducted from the total open releases shown on the portal in order to determine the quantity of product still required by the XYZ plant. Through the use of the advanced ship notice (ASN) module on the supplier portal, international suppliers to XYZ's U.S. plants can have in-transit calculations done for them. When an ASN is created by selecting a specific release for shipment, the portal maintains the shipment history and calculates the "balance-to-ship" information for each release on the open PO summary download. Second, the XYZ legacy system does not have unique release identifiers and cannot distinguish one release from another in the receiving process. When product is received at the purchasing plant, the system always applies this quantity to the release with the earliest due date regardless of which release the supplier intended to satisfy with that shipment – even if the release was created after the shipment was made.

When releases are changed (as described above) and show earlier request dates than the supplier had originally planned, the supplier must re-confirm based upon the new sequence of releases – again showing the earliest confirmation and shipment planned to satisfy the release with the earliest request date. The supplier can use the 'comments' section of the supplier portal to show any relevant history of confirmation adjustments due to changes made by XYZ. Because of these limitations, all shipment planning and subsequent in-transit tracking must be applied against the earliest requested release. Suppliers must verify current release information and ship the earliest requested, confirmed release with a 'balance-to-ship' greater than zero. Note that this may require a supplier to reconfirm.

Engagement with integration

Strategy: XYZ began its integration initiative by examining the positioning of strategy within the organization. Top management at XYZ evaluated how the corporate mission drove all other components of the firm. Importantly, they decided that a new norm governing the company would be that business strategy must go in front of supply chain strategy, and that supply chain strategy must go in front of supply chain structure. This served to insure that all operations within the organization would be driven by the firm's overarching mission. Too, management came to the realization that it would be haphazard to construct a supply chain and then attempt to fit business and supply chain strategies to this structure. In short, they realized that a supply chain built in the absence of corporate direction would result in a structure lacking the resilience to face new, arising, initiatives. They realized that strategy should drive the formulation of supply chain strategy, and that, in turn, supply chain strategy must be constructed to withstand current and (possibly) changing business conditions such as capacity and bottlenecks, labor availability, regulations (environmental, security, and transportation, as well as regulations which might arise in the future), changes to supply chain costs (such as sourcing and fuel), and other risks and threats to company performance. By informing the process in this fashion, XYZ sought to insure that supply chain management became an organizational concern, rather than being delegated to the responsibility of IT or being perceived as an operational issue.

Once a mission statement was in place, XYZ turned its attention to crafting their supply chain strategy. They conducted an exercise aimed at eliciting from participants a vision of how the future supply chain should look. The state of the future supply chain needed to present

an integrated organization, an organization where silos cease to exist. The result of this careful planning became designated as XYZ's Supply Chain Initiative. The initiative identified key elements of the firm's emerging supply chain strategy. It included the need to organize to drive supply chain programs throughout the business, to eliminate root causes that stress the supply chain, to simplify and leverage their logistics network, to digitize the supply chain, to optimize, through their usage of tools and process, the supply chain, to drive the supply chain programs using new products as catalysts, and to proactively manage trade compliance. Each of the key elements of the strategy was firmly rooted in the firm's driving principles and values of arriving at a single, integrated company, and eliminating communication barriers. In short, XYZ believed that good information equated to good decision making. In turn, good decision making equated to good supply chain management. XYZ wished to strive for supply chains that are predictable, visible and secure, and would permit, at all levels and locations of the supply chain, the use of standard metrics to drive both performance and corrective actions as needed.

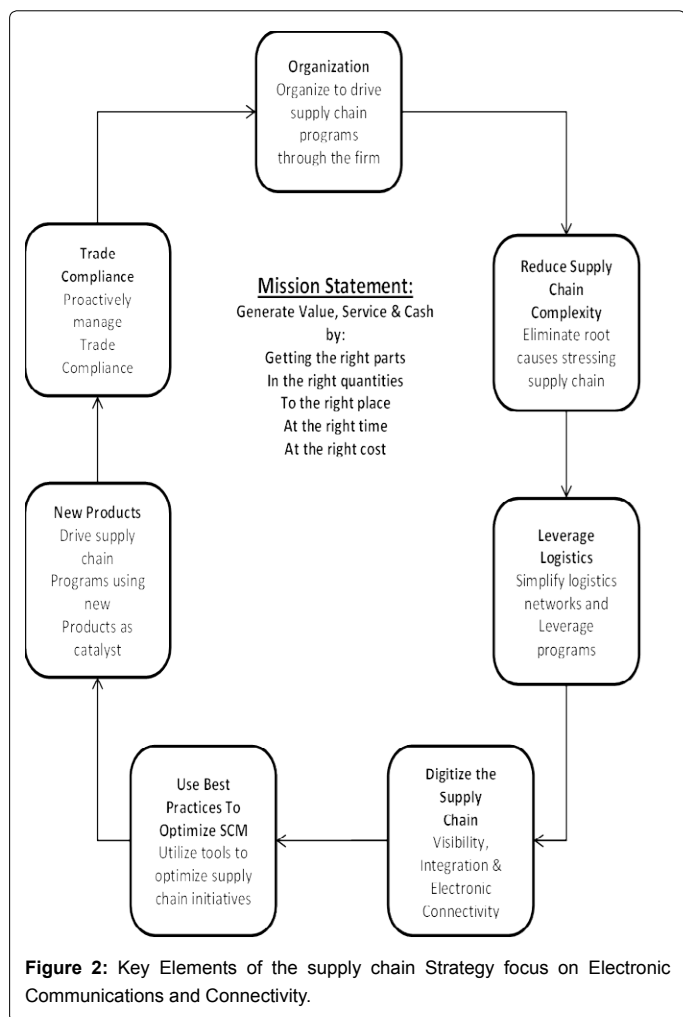
The work which top management undertook in its decision to promote integration of their entire supply chain can be seen in the following figure (Figure 2) which focuses organizational attention on the key elements of the supply chain strategy of promoting a focus on electronic communications and connectivity. A move toward continuous improvement has been formalized through the way in

which the key elements fit together, as the path through the figure revisit each element in an unbroken and unending fashion (Figure 2).

Because of the number of suppliers comprising XYZ's supply chain, the total supply chain was extremely complex. In recognition of this complexity, XYZ sought to translate its supply chain vision into a series of high level enablers. Management thought at XYZ was that the incorporation of high level enablers to drive the supply chain would achieve greater buy-in from its numerous supply chain partners. The following key enablers, then, were included into the vision of the future supply chain. First, XYZ wanted to focus on aligning all areas to a commonly agreed-upon set of performance metrics and targets in its quest to eliminate silos throughout the organization. Second, XYZ wanted to secure commitment to reducing total supply chain costs as well as to establish enterprise-level mechanisms to recognize, and potentially offset, shifts in costs and savings. Third, XYZ sought to require a single touch-point responsible for coordination of and measurement of results achieved through implementation efforts rather than house the supply chain initiative on partners throughout the world. Accomplishing this feat would permit XYZ to maintain the responsibility of continually refining and institutionalizing recommendations after initial implementation. To facilitate this, XYZ also crafted a number of metrics, subject to the following guidelines: metrics should be developed in an outcome-based process; metrics must fit a clear and purposeful hierarchy; metrics must be associated to targets and monitored; metrics should be appropriately balanced across all aspects of supply chain performance; and metrics must be acknowledged and shared among the partner organizations. Fourth, XYZ sought to move from customers choosing how their order is fulfilled at a very granular level to global optimization of supply chain. This would allow a customer to specify his/her required service levels and cost criteria. In turn, an optimal supply chain would dynamically select the channel, route, and carrier to best meet the customer's requirements. Finally, XYZ realized that the key to enterprise improvement is a shared view of goals and collaboration and cooperation between the partner organizations across functional boundaries. In particular, XYZ noted that work underlying the Supply Chain Operation Reference model (SCOR) enables such collaboration because of the standard language, definitions, metrics and hierarchies that different organizations use to work towards shared goals. These goals were in-keeping with XYZ's new mission and supply chain strategy.

As a final step, the top management engaged in determining different opportunities which were identified by the partnership toward an integrated, fully visible supply chain. The opportunities included the ability to address their distribution process, with an eye toward improvement and deployment of a tighter process. XYZ saw an opportunity to optimize both surface as well as airlift aspects of the manner in which the supply chain operated. They could finally concentrate on both supply alignment, as well as strategic network optimization. Supply alignment allows for the strategic placement of selected material in forward inventory locations to minimize the use of high-cost air transportation, as well as serving to increase distribution. Strategic network optimization defines the optimal location for key distribution modes, such as inventory locations, sources of supply, consolidation and deconsolidation for all locations, as well as transportation hubs and ports.

Information technology: XYZ determined that interconnectivity and information sharing were of huge importance to its operations. In addition, XYZ also desired electronic connectivity throughout the organization, which may be facilitated by the organization's portal



or through a transaction portal. The goal remained, however, one of linking all organizational divisions, all trading partners, and all suppliers.

XYZ also determined that an important enabler of connectivity would be the requirement of common data transactions and standards. Common data and standards would facilitate easy transmissions through the system, as well as promote a common language with all entities of the partnership. Hence, a part would be referenced by a single product code throughout the system, rather than possibly requiring translation as information moved from one partner to another. An underlying goal of common data and standards was to increase data visibility in the supply chain, which in turn would define better the job of the system's exception management tools.

The integration project also addressed the many issues faced by XYZ with its legacy system. Each release now has a unique identifier, thereby allowing communication between the supplier and the XYZ system to be specific to it so that the receiving process can apply receipts to specific releases. The unique identifier accompanies the material on a bar-coded label. Along with this change XYZ enabled real-time, two-way communication between the supplier portal and the legacy system so that confirmed releases can be blocked from additional changes, which could be made only by contacting the supplier directly and requesting that the confirmation be removed.

Discussion

The table below compares pre- against post-integration from both a strategic as well as an information technology perspective.

Importantly, the post-integration indicates that XYZ has managed to fulfill many of the goals which they had set at the beginning of their push for integration. The supply chain has been optimized, and, because the optimization occurred at the supply chain level, more of the company's customers are able to reap the benefits. Efficiency has been enhanced, as standardized, and agreed-upon metrics now measure performance throughout the enterprise. Collaboration between XYZ and its supply chain partners has increased, and goals are now being set in common between the two companies. Rather than hoping that its supply chain functions properly and transactions occur on scheduled bases, the company is now enjoying a supply chain which has been revamped by the integration effort. Coordination is up, points

of contact are well identified, and performance has improved across the board (Table 1).

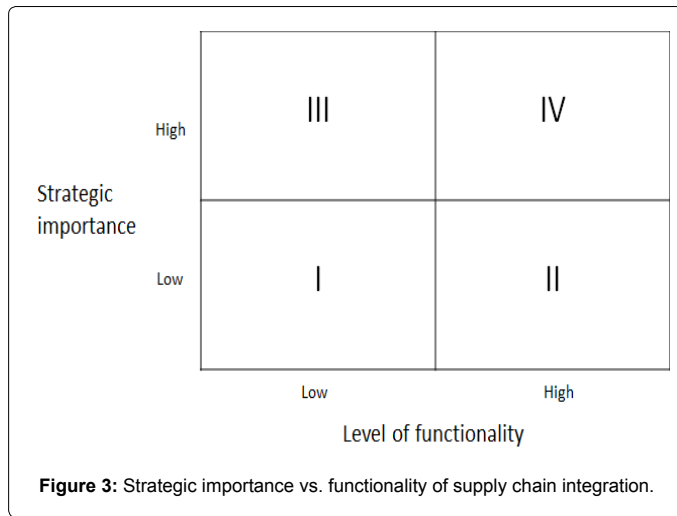
From a systems, or information technology, perspective, performance has been boosted through replacing multiple different systems with up-to-date technology. The technology includes an internet-based portal. The portal not only standardizes inputs to the system, but also standardizes the interface available to all customers. On a world-wide basis, one interface provides system access to both XYZ as well as its trading partners. Two-way communication has been established. This allows for both action and reaction at both ends of the supply chain, i.e., at XYZ and at its trading partner sites. Unique identifiers have been incorporated into its purchasing data, which results in specific, and easier, identification throughout the system. In summary, placing the supply chain at the center of its strategy has brought huge benefits in performance, efficiency, and effectiveness to XYZ.

Looking beneath the surface of the strategic exercises in which the company, its officers, and staff participated, it can be seen XYZ attempted to define, for all members of the firm, what exactly is the role and importance of the supply chain to the company. In other words, XYZ questioned the extent to which the supply chain was integral to its operations, profitability, and survival. Figure 3 depicts a framework using which the role of the supply chain was questioned and the integration efforts by XYZ were formalized. The framework is based on two dimensions: *strategic importance* describes the extent to which supply chain integration enables an organization's responsive strategy, and *level of functionality* describes the extent to which supply chain integration enables the sharing of crucial information on operations, tactics, and strategies with trading partners. An explanation of each quadrant in Figure 3 follows:

- **Quadrant I:** Low Importance, Low Functionality. The role of the supply chain is to meet production or inventory demands.
- **Quadrant II:** Low Importance, High Functionality. The role of the supply chain is to provide a more complete picture at the "operational" level and to provide members of the work force greater insights into their own activities. The potential of the supply chain is employee driven performance improvement.
- **Quadrant III:** High Importance, Low Functionality. The role of the supply chain is to provide data and transactions that allow more clear and organized management views of inventory and production.

Aspect	Pre-integration	Post-integration
Strategy	Independent targets and performance metrics for various silos within the enterprise	Commonly agreed-upon set of targets and performance metrics for the enterprise
	Idiosyncratic supply chain based on customers' choice of how their orders should be fulfilled	Optimized global supply chain based on service levels and cost criteria specified by customers
	Supply chain initiatives reside with the trading partners throughout the world	Organizational "homes" for supply chain initiatives with a single touch-point for coordination and measurement
	Lack of organization-wide metrics for supply chain evaluation	Appropriate metrics to evaluate all aspects of supply chain performance and to be shared with partners
Information Technology	Independent goals and strategies for trading partners	Shared goals and collaboration between trading partners
	Use of many production and planning systems for communication with local suppliers	Implementation of an internet-based supplier portal for improved communication with global suppliers
	Use of a legacy enterprise system to manage purchase orders that were not uniquely identified	Adoption of an organizational system for managing purchase orders with unique identifiers
	Lack of information connectivity and visibility due to disparate systems in its different locations	Deployment of a streamlined system with common language applicable to all locations
	Various data and document standards for different systems	Creation of common data standards and transactions
	Lack of connectivity between the internal enterprise system and systems with suppliers	Two-way communication between the internet-based portal and the enterprise system

Table 1: Comparison of pre- and post- integration at XYZ Company.



The potential of the supply chain is increased managerial control over the business and its partnerships.

• **Quadrant IV:** High Importance, High Functionality. The role of the supply chain is to alter the industry or organization through new customers and partners, new strategies for meeting company production or inventory demands, and redefinition of relationships with customers and suppliers (Figure 3).

Before initiating its supply chain integration activities, XYZ may be positioned in Quadrant II (i.e., low strategic importance and high functionality of the supply chain). However, in evaluating its supply chain activities prior to integration, XYZ realized that it was possible to make the supply chain more strategic to its operations. Having perceived the possibilities of the supply chain that may be possible, XYZ engaged in a supply chain integration effort that moved it to Quadrant IV (i.e., high strategic importance and high functionality of the supply chain).

The perspective discussed in Figure 3 may assist in determining the extent to which the organization's implementation of integration is as complete and fully functional as compared to other organizational supply chain implementations. Additionally, for those organizations wondering why their supply chain isn't operating optimally, Figure 3 may draw the organization to the realization that the business (including its top management) needs to revisit the organizational vision for, and prescribed purpose of, its supply chain. In essence, the idea underlying Figure 3 is the notion that the supply chain which the organization implements is an enactment of the firm's business strategy.

There are a few lessons to be learned from this company's journey. First, practitioner companies can examine their strategy to determine the role which the supply chain serves in their own company. Those who believe that there is disparity between the corporate strategy and the level at which the supply chain functions and/or enables partnerships toward business profitability might wish to re-examine this strategy to see if some tweaking might be possible to forge a stronger alignment.

Second, those companies which are unable to determine what level of supply chain functionality is needed in order to fully support their organization and its strategic goals may wish to step through each quadrant of the framework. Doing so will allow them to match their supply chain to one of the corresponding descriptions. Again, our message is that, should the organization believe that disparity exists, the exercise may point out that some work, both in terms of

the organization and its strategy, as well as work addressing the supply chain itself, is needed.

Conclusion

This paper has examined the work undertaken by one company, XYZ Company, to re-craft and revitalize its supply chain. The company had been facing a variety of issues (including excessive costs and poor customer service) because of inefficiencies in its supply chain. When the company examined its supply chain, it focused on a means to establish end-to-end digital communication throughout the supply chain. In doing so, they adopted standards and data definitions throughout the supply chain. Prior to beginning work on the supply chain, the company's top management conducted an investigation of its strategy at various levels. The goal in looking at its strategy was to ensure that the supply chain was drawn in accordance with the strategy, and that the resulting supply chain would be flexible enough to adapt to and adjust to changing business conditions over time. XYZ Company wanted to create supply chain linkages which would last into the future. In effect, their supply chain became a tangible enactment of the company's newly formed strategy.

Organizations are struggling with their supply chains in order to overcome a number of deficiencies which they have discovered in today's business environment which has focused attention on efficient supply chains and data and information visibility. The level at which initial work was being done at XYZ Company, i.e., the top management level, indicates the importance of today's supply chain as a concern for the entire organization.

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