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Chapter 16—SUPPLY CHAIN PROCESS INTEGRATION AND A LOOK TOWARDS THE FUTURE

For those for whom integration is not happening, the future is bleak and getting darker. 1

There is a lot of value that is “trapped” between the processes trading partners use to transact business, and when companies work together, they can unlock that value and share its benefits. 2

LEARNING OBJECTIVES

After completing this chapter, you should be able to:

Discuss and compare internal and external process integration. Discuss the requirements for achieving process integration.

Describe the barriers to internal and external process integration, and what can be done to overcome them. Understand the importance of performance measurements in achieving internal and external process integration. Understand why it is important to align supply chain strategies with internal process strategies. List and describe the eight key supply chain processes, and how trading partners integrate these processes. Discuss a number of the latest trends in the areas of process management and process integration.

CHAPTER OUTLINE

Introduction

Achieving Internal Process Integration

Extending Integration to Supply Chain Trading Partners

A Look at Trends and Developments in Integration and Process Management

PROCESS MANAGEMENT IN ACTION

—An Interview with Zack Noshirwani, Vice President of Integrated Supply Chain for Raytheon

The Raytheon Company is a major defense contractor; its major customer is the U. S. Department of Defense. Mr. Zack Noshirwani, vice president of integrated supply chain, joined Raytheon in 2001, and prior to his current post served as vice president for operations for both the Air/Missile Defense Systems and for Integrated Defense Systems. Previously, he worked in operations and supply chain capacities with Honeywell Engines and Systems, Allied Systems, and Lockheed Martin Defense Systems.

Q: How is operating a supply chain different when the Department of Defense is your major customer? Noshirwani: We need to adapt to the changing customer first. The focus within DOD has shifted from products to capabilities. And, second, they have raised the awareness of mission assurance within the defense business generally and the missile defense business, in particular. Within Raytheon, Bill Swanson, our CEO, has said we are going to take mission assurance to the next level across all our businesses. Putting that together, the challenge we have is: How do you make our supply base aware of our new expectations; and, what do mission assurance and our new business strategy mean to us? That change forces us to look at the historical supply chain in a different set of paradigms.

Q: What was the shift of objectives?

Noshirwani: We went from operating traditional purchasing and supply chain organizations to what we today call an integrated supply chain. With that, we

intend to link our engineering groups and our performance excellence groups with our supplier base as early as we can in the process when building relationships with our suppliers. We need our suppliers to be an extension of ourselves. The old routine, when dealing with our suppliers was focused on costs, quality, and schedule. Lack of performance in these categories generally provided a stressful exchange. That has changed. Now, it's going to be more collaborative. We'll be working together so that we're building the right stuff on time, correct the first time. There can't be three iterations before we get it out the door.

Q: How do you do that? What is the task?

Noshirwani: One key thing: We used to be a very tactically oriented organization; we're now shifting to become more strategic. For example, we are organizing more supplier conferences at which we can establish expectations with our supply base. This past June, we had 67 of our key suppliers participating in a supplier forum. The theme of the event, "Performance Matters," focused on how mission assurance is a key element. We are communicating what mission assurance means to us and to our supplier base, to make sure that their behaviors, our behaviors, and our relationships all improve over time.

Q: Ideally, what would you like to get from your suppliers?

Noshirwani: When I look at my integrated supply chain of the future, I'm going to use a phrase: a netted integrated supply chain. What does that mean? As Raytheon IDS works to become a Joint Battlespace Integrator, we will have expertise over multiple domains. The challenge for our supply chain

organization, then, is to take the suppliers who are expert in certain domains and knit them together to allow us to create solutions to satisfy our customers' needs and support our business vision.

Q: Does this mean that suppliers will be working with other suppliers?

Noshirwani: In some cases, absolutely. Then the question is: How do we broker them to partner with each other to bring us the best result?

Q: With this new business focus, what sort of measures do you use to determine your success? Noshirwani: Previously, the majority of our metrics were internally focused on the supply chain. While we still have some metrics that are internally focused, we now have an organizational perspective that measures the value we provide to the business. These metrics are in the area of effectiveness, efficiency, capability, and capacity. We've also now established metrics that are linked directly to our business performance and to our customer's expectations. The key focus is: How do we create value for our customers and our business?

Q: Now, what are those new metrics?

Noshirwani: One of them is cash-to-cash cycle—how quickly do we collect cash from our customers? Another one is on-time performance to contract. Do we deliver our hardware the way we said we would, when we said we would, with mission assurance and quality levels that satisfy our customers? And third—we have a strategy within Raytheon IDS that is linked around asking: How do we improve our overall cycle time within our business?

Q: Why is that one crucial?

Noshirwani: If our customer is king, and if we need to jump through hoops to come up with a satisfactory solution for that customer, then we need to be very agile, very flexible. We will need to take on challenges we've never taken on before. To make that possible, flexibility within the supply chain becomes very key.

Q: How would you characterize your supply chain effort?

Noshirwani: As I said, we've just reorganized our entire supply chain around the Raytheon IDS vision and our customer's expectations. That supply chain has five major capabilities in it. One is what we call collaborative solutions. That is a group of very talented, top-notch supply chain experts who are engaged with our business development people early in the process. We have supply chain professionals who are engaged in that process, to help with the partnering suppliers, the supply selection process—who do we want to partner with to win this proposal? So that's one capability.

Q: You mentioned subcontracting. Is there a piece for that?

Noshirwani: Yes, that's the next capability. With our business shifting from a product-focused to capabilities-focused solutions, Subcontract Management is a key part of our supply chain activity. Our strategy here has been to add new skills, tools, and techniques to manage major subcontracts. Today, we have close to \$2 billion in subcontracts that we are managing.

Q: And finally?

Noshirwani: Finally, our Integrated Supply Chain organization continues to support the products foundation for our business. Material Acquisition, Planning & Product Management, and Integrated Logistics are all key

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elements in supporting our manufacturing operations with the right material at the right place at the right time and cost. The focus in these areas is transformational change to increase the effectiveness and efficiency of operations. Examples include all elements of e-procurement, reduction in transactions, lean supply initiatives, and innovative materials handling and flow techniques.

Q: That's organizational. What about people? How do the people you're looking for today differ from five or ten years ago? Noshirwani: Traditional supply chain professionals are still very critical to the success of our organization. But, if I had a wish list and all my wishes came true tomorrow, then I would want to hire professionals from this day forward who have multi-disciplined experiences and expertise in program management, project management, engineering, operations, and supply chain. Integrating these key capabilities is critical to the success of our integrated supply chain.

Q: How hard is it to find such people?

Noshirwani: It's very hard to find such people. I might want to hire the next five program managers that come my way, but a lot of other places also want to hire them. The Defense Department is trying to hire those same skills. Of course, if we see people with the skills we want available on the street, we scrounge them up.

Q: If the people you want are at a premium, how do you meet your need?

Noshirwani: Within our new supply chain, we have created and communicated a career path for the future program managers of our business through the supply chain organization. We have set up rotational

assignments that move people from engineering to business development to performance excellence—all through the supply chain organization so we create multi-dimensional people. We are sowing some of the seeds for tomorrow. At the same time, we are taking some of the veterans of these functional areas and convincing them to take a career path into integrated supply chain.

Q: Does this change much affect your IT requirements?

Noshirwani: The key IT task is connectivity. The most important question in my mind is how do I connect my programs, engineering, performance excellence, supply chain, and operations professionals to the best of my ability? How do I share information across the board as fast as I can? Then, how do I drive that connectivity into my supply base? That's one thing that's required if we are to engage suppliers early in the process.

Q: Is it fair to say that the new standards you have from DOD will ripple back through your organization? Noshirwani: In my mind it has to—the DOD is our customer. We have strong relationships with our DOD customers, built on our performance and superior solutions we provide. New standards are another aspect of the dynamics of this business. We know we need to listen and be responsive to our customer needs, and provide solutions at ramp speed.

Q: A final question: How important to supply chain reengineering is support from top management? Noshirwani: My boss, IDS president Dan Smith, will say at every meeting: If we can't get our suppliers in line, and if we can't change how we do business internally, then we're not going to get to where

we need to be to. Time is of the essence. It's an absolute must happen. Source: Bernstein, M., "Raytheon Goes From Traditional Purchasing to an Integrated Supply Chain," *World Trade*, V. 18, No. 11, 2005, pp. 36-38. Used with permission.

INTRODUCTION

Unfortunately, in too many journal and magazine articles, books, and television programs these days, supply chain process integration is dealt with solely in terms of information system applications—in other words, simply connecting buyers and a suppliers via the latest software application results in successful supply chain process integration. Hopefully, readers of this text have begun to realize that the latest enterprise software applications increase access to information and can certainly add value to internal and external process integration, but they do not allow companies to replace or leapfrog the necessary people-oriented elements involved in supply chain management or process integration in general. So, while Chapter 9 of the text, which dealt with information flows, and several other chapters of the text have discussed or mentioned the use of information systems when managing processes, this chapter seeks to guide the reader towards a deeper understanding of successful supply chain process integration, and the necessary steps and tools to get there.

Chapter 1 described the general idea behind business process integration, namely the sharing of ideas and information, coordination of process activities, and collaboration on process design and implementation between supply chain members, such that products and services are provided at the desired levels of quality, speed, and cost along the supply chain—from raw

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material suppliers to end-product consumers. Business research over the past 10 or 15 years has, for the most part, found a positive relationship between process integration and firm performance.

3 In general terms, successfully integrating key business processes among supply chain trading partners is the essence of supply chain management, and remains one of the biggest hurdles for all companies implementing supply chain management practices. However, as described in the two statements on the opening page of this chapter, there is much to be gained through process integration.

This text has been divided along the lines of the eight key processes involved in supply chain management—customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, supplier relationship management, product development and commercialization, and returns management. Successfully managing supply chains requires the firm to first become internally integrated in the relevant key business process areas, and then look to integrate these processes with important trading partners. This requires breaking down barriers to integration inside the firm, followed by establishing a high level of trust and working experience with the firm's trading partners, and involves the use of appropriate technologies and performance measures to improve internal and external integration capabilities. Process integration is thus something that evolves over time within a firm's workforce and its supply chains. Successful process integration is also something that can be difficult for firms to benchmark; rather, each firm must develop its own unique set of integration capabilities.

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Different firms have different employees, cultures, processes, products, suppliers, customers, and technical capabilities; therefore their means to successful integration and supply chain management may vary from their competitors, or other firms like Texas-based computer manufacturer Dell and mega-retailer Wal-Mart who have created reputations for possessing superior supply chain management capabilities. In short, there is no “ silver bullet” set of detailed practices that will guarantee process integration or supply chain management success. Managers must define and uncover the appropriate supply chain strategies for their firms, align their own business strategies to those of their supply chains, and then design operations practices that support the strategies. In a multi-year study first launched in 2005 by MIT’s Center for Transportation and Logistics, a number of successful companies are being studied with the intention of identifying general attributes critical to successful supply chain management. So far, they have found that companies need to adopt a “ competitively principled” strategic supply chain management framework, or in other words, develop a set of tailored practices for their company that lead to success, based on their unique resources and the required supply chain strategies.

4 Because successful internal and external process integration also requires the passage of time, most firms and their supply chain trading partners are still heavily involved in their process integration efforts. This is exacerbated by the seemingly continuous entry of new competitors, new suppliers, new customers and customer requirements, and new information and communication technologies to the marketplace. Consequently, there are many new trends in process management and process integration impacting

supply chain management. Some of these trends and developments will also be discussed in the final section of this chapter.

ACHIEVING INTERNAL PROCESS INTEGRATION

As a reminder, the term process integration means coordinating and sharing information and resources to jointly manage a process. Integration can occur both internally or externally with respect to the firm, and reflects how harmoniously employees or businesses work together to accomplish tasks. Developing communication, information sharing, and collaboration capabilities among employees in different units within an organization can be quite difficult, particularly when departments are busy protecting turf and fighting for their share of tight budgets and other firm resources. But this type of behavior, along with other internal barriers, must change in organizations serious about process integration. In some industries, process integration is the norm and has become necessary for survival—take the automobile industry, for example. As described in Chapter 10, Japanese auto manufacturer Toyota had become quite proficient at lean principles by the 1980s, in part by creating opportunities for its employees to integrate their efforts when designing and building new automobiles, and when solving manufacturing and quality problems. As a result, Toyota has been able to provide higher quality automobiles with shorter new model cycle times when compared to most of their competitors. Consequently, Ford, GM, DaimlerChrysler, and other auto manufacturers have been forced to follow suit to stay competitive. As of mid-2006, Toyota was trailing only GM as the world's largest automaker and was easily the world's biggest in terms of profitability (approximately \$20 billion per year).

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5 In fact by 2001, most North American automakers reported that they were practicing internal integration of key processes, and working hard at forming fully-integrated supply chains.

6 To achieve internal process integration, firms must first lay the groundwork necessary to begin process integration efforts.

This includes breaking down internal barriers to collaboration, connecting departmental and unit information systems, and developing performance measures that encourage teamwork and collaboration. When the firm's employees are comfortable working together and sharing ideas and information, then supply chain management efforts and external process integration with trading partners can begin to take place.

The Preparation Phase

To adequately prepare the organization for external integration and supply chain management efforts in general, managers must first create an internal environment where teamwork and information sharing are encouraged and rewarded. To accomplish this, existing barriers to collaboration must be removed, information systems within the organization must be unified under one central database, and collaboration performance measures must be designed, implemented, and periodically reviewed.

Breaking Down Internal Barriers to Collaboration

Internal barriers to collaboration can be classified as technological (information system software/hardware) barriers, structural (management hierarchy, goals, procedures) barriers, and cultural (employee values, norms, behavior) barriers. Chapter 9 discussed a number of information system problems, including the purchasing of software applications at different <https://assignbuster.com/early-supplier-integration-in-the-design-of-the-skid-steer-loader/>

times or purchasing best-of-breed software solutions from different vendors, both of which require integration middleware to tie the systems together, or the use of web services and web portals to create information sharing capabilities for the disparate applications. These could be considered technological barriers to collaboration. A few years ago Washington-based fashion retailer Nordstrom's online site, nordstrom.com, found itself unable to accept gift cards purchased by customers at Nordstrom stores (it lacked a linkage process to the Nordstrom bank's mainframe required to validate and execute the transaction). The company adapted quickly by using XML web services to integrate its systems and create a standard data format that all of the company's systems could understand.

7 XML web services are becoming the basic platform for application integration. Applications are constructed using multiple XML web services from various sources that work together regardless of where they reside or how they were implemented.

Structural barriers to collaboration include the often slow, bureaucratic decision-making hierarchy in firms; poorly designed pay systems and incentives; and ineffective administrative procedures and policies. An incentive pay system that encourages groups of employees to work against one another is a structural problem, for example. Steve Banker, senior supply chain analyst at the ARC Advisory Group in Massachusetts advises companies to establish compensation methods that reward teamwork. "If you tell people to work as a team, to make it work, you need metrics that measure supply chain performance. Then you have to tie punishments and rewards to those metrics."

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8 Structural change involves a top-down management approach, because the expertise and resources needed for administrative improvements requires the involvement of middle and upper management. When problems such as a lack of communication and teamwork are acting as barriers to internal process integration, structural changes are needed, and this requires upper and middle management to take the initiative to propose and implement structural solutions. Structural change implementation tactics can include employee education, instituting cross-training and process teams, and manager/worker negotiations to achieve acceptance of the changes. During the early days of U. S. professional baseball, hiring a hearing-impaired player on one team initially caused a severe communication problem among the team's players. The coach's solution was to implement a structural change—he taught the entire team a version of sign language to improve communication. This creative solution ultimately led to the widespread use of hand-signaling among baseball team coaches and players.

9 More recently, when the U. S. Congress mandated the restructuring of the Internal Revenue Service (IRS), a number of structural changes were implemented to improve customer service and protect taxpayer rights.

For example the IRS Large and Mid-Size Business Division was created to administer taxes for businesses with over \$10 million in assets. Lately, the IRS has adjusted managerial p of control to better balance the number of employees reporting to managers, eliminated management redundancy in some field offices, and adjusted the number of its core industry groups from seven to five.

10 Hospital Corporation of America (HCA), a leading healthcare services provider based in Tennessee, designed an organizational structure that groups everyone together to improve the organization's effectiveness. The equipment people include nurses and lab technicians, and construction people include engineers and construction professionals, for instance. Thus, diverse groups of people at HCA are working together towards the same goals.

11 At IowaHealth- Des Moines, consisting of three hospitals, a new staff position was introduced called "master of the environment," where employees are cross-trained in all of the hospitality services, allowing them to better serve patients and permitting them to float between departments and hospitals where needed. This has improved patient satisfaction as well as employee satisfaction.

12 The third set of barriers to internal process collaboration or integration can be much more difficult to overcome, namely the often deeply-rooted cultural barriers to collaboration within the firm, which can encourage employees to hoard information, hide operating problems, and shy away from working together as a team to develop optimal solutions for the organization. This is sometimes also referred to as the silo mentality, where workers act only in their own best interests, and managers act only in their departments' best interests. An overall lack of trust can permeate this type of organization. Cultural changes in the organization are required to reduce the silo mentality and improve trust, or how employees think about their coworkers and the organization. In these types of cases, the organization as a whole must undergo change. Training large blocks of employees is perhaps

the most frequently used tool for changing an organization's mindset, and the impetus for cultural change must come from top management. Other activities used in managing cultural change include frequent communications with all employees; management behaviors that are consistent with desired values and beliefs; use of newsletters, intranets, kiosks, and videos; resolving cultural differences as quickly as possible; and the development of a cultural integration plan. Forest product company Weyerhaeuser, headquartered in Washington, uses an arsenal of educational tools to help its employees get comfortable working together under one company culture. It uses an interactive game to convey the payoffs of aligning work styles, and has also created a DVD entitled "All in One" to explain the homebuilding industry and the firm's collaboration strategies.

13 When mergers occur, cultural clashes can result in many problems for the newly formed company, requiring managers to be proactive in building a new vision and integrating cultures and values. When pharmaceutical companies Astra of Sweden and Zeneca of the United Kingdom merged in 1999, a senior executive team approved a range of proposals to support the development of a new culture. A key proposal was to create a global cross-functional leadership development program, initially for the top 200 people in the company. This successful program led to a more innovative learning environment and greater levels of trust in different parts of the firm. Within three years, about 900 managers had actually participated in the program.

14 When California-based switch maker Cisco formally took control of optical transport producer Cerent Corp., also of California, in 1999, the company mobilized a transition team to oversee every detail of Cerent's assimilation.

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As soon as Cisco took over, every new employee had a title, boss, bonus plan, health plan, and a direct link to Cisco's internal website. Team members distributed basic information about the Cisco organization, its vacation policy, and its benefits to employees. The aim was to reduce uncertainty so employees could more quickly focus on their jobs.

15 The Service Perspective feature describes the integration challenges posed by the merger of U. S. retailers Kmart and Sears.

SERVICE PERSPECTIVE—Sears Faces Massive Supply Chain Integration Challenge

With nearly 40 supply chain systems between them, Sears and Kmart must decide which will best support the combined concern's 3, 500 stores. The enormous IT integration challenge will be even harder for the newly formed Sears Holding Corp. because, industry experts contend, neither firm's supply chain has been a model of agility. " This is a huge endeavor they have to go through, and neither one is known for excellence in IT or supply chain [management]," says Noha Tohamy, principal supply chain analyst with market researcher Forrester Research Inc., in Cambridge, Massachusetts. To realize the \$500 million in operational efficiencies that Sears Holding executives promise, analysts believe the retailer needs coherent IT and supply chain operations.

The recent Sears and Kmart marriage, however, creates a protracted supply chain management chore. Streamlining the myriad applications is " a time-consuming and arduous process" that will take Sears Holding " several years," says Kim Picciola, a retail analyst with Morningstar Inc., an investment research company in Chicago. Amid headlines about cutting

expenditures, brand names, and store locations, Sears Holding publicly eschews talk about such issues. Since shareholders finalized Kmart's takeover of Sears on March 25, 2004, corporate officials have added little to their initial broad statements about improved efficiencies and cost savings.

"The organization is still taking shape," says Chris Brathwaite, a Sears Holding spokesperson in Hoffman Estates, Illinois. "I don't think there's any definitive description of [supply chain] strategy at this point." That hardly surprises Dean Lane, chief executive of Varitools Inc., a software vendor in Sunnyvale, California. "IT is almost always an afterthought [after a merger]," says Lane, a veteran of several companies' merger and acquisition activities. When they announced the union, corporate officials pledged to generate \$200 million in revenues through cross-selling opportunities and by converting several Kmart stores to the Sears name. Maximizing purchasing power from suppliers, enhancing supply chain and administrative efficiencies, and divesting real estate assets will help save another \$300 million, the company stated in a press release announcing Kmart's planned \$12.3 billion takeover of Sears.

It's unclear what supply chain strategy will help the company attain such lofty goals. "It's too early to get into specifics," says Brathwaite. Sears Holding inherits both organizations' 37 supply chain solutions from a host of vendors, including Manugistics Inc., i2 Technologies Inc., and Manhattan Associates Inc., says Lee Holman, product development vice president at IHL Consulting Group in Franklin, Tennessee. According to Holman, Kmart operates three inventory management, three merchandise planning, and four logistics management systems. Sears runs two inventory management,

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three logistics management, and four merchandise planning solutions. Despite some commonality, the companies use the solutions differently. Customers, says Holman, can find merchandise on Sears' shelves, but " you can't say that about Kmart." Observers want to know which existing solutions the new retailer will adopt or jettison, and if it will invest in new ones.

Tohamy believes Sears Holding halted an evaluation of new applications, such as in-store replenishment and merchandise optimization packages, while it assesses each company's operations. While such an undertaking is necessary, Tohamy worries about the pace of review. " They have to clean house, move as fast as possible, and show how they will create additional flexibility and efficiencies in the supply chain," she says. First, however, Sears Holding must determine its priorities, such as what and why it is, who its customers are, how often they visit and how much they buy, and what it will sell, says Paula Rosenblum, retail research director with Aberdeen Group Inc., a market research concern in Boston. Then the company must assess its business processes, including how stores interact with suppliers and distribution centers. " They need to figure all that out before investing in an inventory-management application that costs \$1 million that won't provide any benefit because it has no clean data to work from," says Tohamy.

Sears Holding must also determine how to meld two different businesses, and if or to what degree to consolidate supply chain operations. " I don't see Kmart and Sears being able to work off the same strategy," says Steve Banker, supply chain management service director with ARC Advisory Group Inc., a research concern in Dedham, Massachusetts. " One's a department

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store and one's a discount mass merchandiser." Banker recommends integrating resources for the biggest bang. Both sell apparel, for example, so Sears Holding could operate fewer warehouses and a set of common supply chain systems. "The company could standardize on [Kmart's] Manhattan [application] or on Sears' third-party logistics providers," Banker suggests. Conversely, Sears Holding may need separate strategies to support different priorities. Sears, for example, may require higher service levels to stores, which would require warehouses to fill Sears' orders faster. "That makes using a common warehouse-management system tougher," Banker says. Tohamy disagrees. "Managing two supply chains is a bad idea," she says. "They want to exploit economies of scale, especially in purchasing and sourcing." Procurement, particularly from overseas suppliers, should be a corporate priority, affirms Rosenblum.

The company must use its size "to design, develop, and source products," she says. "Neither one was all that great [at sourcing], and now they have to become great because all they are [since the merger] is bigger." Having the right product in stock at the right place seems "elementary," Rosenblum adds. Long lead times, ever-increasing customer choices, and competing with operational leaders such as Wal-Mart Stores Inc., however, complicate things. Indeed, Sears Holding must manage suppliers as Wal-Mart does, says John Melaniphy III, executive vice president with Chicago-based retail consultancy Melaniphy & Associates Inc. Some suppliers lose money on each item they sell to Wal-Mart but rely on the retailing behemoth for volume sales. Other suppliers move plants offshore to provide merchandise at prices that Wal-Mart demands. "Suppliers are beaten up by Wal-Mart," Melaniphy

says. “ Kmart and Sears have to get as tough with their suppliers to compete.” Sears Holding’s supply chain venture will take time. Experts wonder, however, if it can ever compete with Wal-Mart and other retailing rivals. “ Realistically, it’s a two-year process” to integrate existing systems or deploy new ones, says Lane of Varitools. Sorting out and implementing supply chain systems is just the beginning, other analysts maintain.

“ They have 12 to 18 months to show significant progress,” asserts Alexi Sarnevitz, retail research director with Boston-based market researcher AMR Research Inc. That means “ not just being competitive [with Wal-Mart and others]; they need to find their own unique positioning.” For sure, Sears Holding’s newly appointed CIO, Karen Austin, has a grueling assignment. At the same time, Holman notes that the ordeal of merging the two retailers’ IT systems presents Austin with a potential advantage as well. “ This is a great opportunity to demonstrate [her] talents,” he says. Mostly, experts agree, it’s an enormously complex consolidation task. “ It sounds like she inherited a mess,” says Banker. Source: Kay, E., “ Sears Holding Corp. Faces Massive Supply Chain Integration Challenge,” *Frontline Solutions*, V. 6, No. 5, 2005, pp. 14-15. Used with permission.

Integrating Internal Information Systems

Today, information systems can play a critical role in information use and visibility, and during internal communications occurring between coworkers within an organization. Emailing someone in the office down the hall, for instance, has become so commonplace that office hallways have become deserted. If an organization’s information technologies are largely disconnected, and if data elements are not stored in a common database

according to some standard format, then workers and departments will not be able to share information, and internal process integration can be significantly impacted. As discussed in detail in Chapter 9, the most common enabler of information system integration today is the firm's ERP system. In that chapter, the importance and capabilities of ERP systems were described, along with various software applications or modules that are used today. ERP systems provide a view of the entire organization, enabling decision makers within each function to have information regarding customer orders, manufacturing plans, work-in-process and finished goods inventories, outbound goods in-transit, purchase orders, inbound goods in-transit, purchased item inventories, and financial and accounting information.

ERP systems thus link business processes and facilitate communication and information sharing between the firm's departments. Since the key business processes overlay each of the functional areas, the firm eventually becomes process oriented rather than functionally oriented, once ERP systems are deployed. This visibility of information across the organization allows for much greater ease in internal process integration. When assessing the current integration status of key processes, firms should first develop an understanding of their internal supply chain. Internal supply chains can be complex, particularly if the firm has multiple divisions and organizational structures around the globe. Managers should consider forming cross-functional, multi-unit teams for setting process integration objectives and performance measures. These cross-functional teams should adequately represent the firm's internal supply chain.

Once the firm has a good overall understanding of its internal supply chain structure, it can begin to assess the existing level of information access across its internal supply chain. Does the firm have a single, company-wide ERP system, linking all functional areas? Are all of the firm's legacy systems linked to their ERP system? How easy is it to extract the information needed to make effective decisions? Are data warehouses being used to collect data from the various divisions of the firm? Firms that are internally integrating key business processes successfully are using global ERP systems and data warehouses to make better, informed decisions. Data warehouses store information collected from ERP and legacy systems in one location, such that users can extract information from various functional areas as needed, analyze it, and use it to make decisions.

An enterprise-wide ERP system allows the firm to use a common database from which to make product, customer, and supplier decisions. Information is captured once, reducing data input errors; information is available in real time, eliminating delays throughout the organization as information is shared; and finally, information is visible throughout the organization—all transactions taking place can be seen and accessed by everyone on the system. As the firm moves away from unconnected legacy systems and moves toward the fully integrated ERP system, as organization-wide cross-functional teams are created to link key processes throughout the firm, and as process performance is monitored and improved, the firm will become more focused on managing its key supply chain processes in an integrated fashion. In a recent survey, companies with mature business processes and

best-in-class information systems were found to have average net profit margins of 14 percent, compared to 8 percent for other firms.

The Spanish clothing company Zara illustrates how information systems can greatly aid integration and lead to higher profits and a competitive advantage. Zara owns its entire supply chain, from design, to manufacturing, to distribution, to its retail outlets. Its retail stores provide direct feedback regarding demand for its fashions using its advanced information system infrastructure. This allows its designers to quickly identify trends, leading to more new designs and styles. Zara is thus able to bring these new designs and styles to market in just three to four weeks. Its retail competitors often take months to do the same thing, causing them to miss many market opportunities.

Read also Zara's identification of customer needs can be categorized as which planning and strategic management step

16 Developing Performance Metrics that Support Internal Integration In order to assess the level of integration occurring within the organization and encourage continued integration activities, department managers and others should design a family of performance metrics around desired collaboration activities. Performance in these areas should be regularly monitored and improvement initiatives undertaken when necessary. The old cliché, "what gets measured gets done" certainly applies to the design and support of integration activities.

Work

Groups

Number of traditional and virtual work groups formed

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Number of cross-functional work-groups formed
 Number of workers participating in one or more work groups
 Percentage of work group objectives met
 Number of projects completed by work groups
 Number of jointly developed products or product improvements
 Number of jointly developed processes or process improvements
 Information Systems
 Number of ERP application implementations and upgrades
 Percent of employees using ERP applications
 Percent of departments using ERP applications
 Employees/Training
 Hours of team-based training sessions provided
 Hours of cross-training sessions provided
 Hours of ERP application training provided
 Number of top management discussions of collaboration in company newsletter
 Employee trust and satisfaction survey ratings
 Reward Systems
 Reward amounts paid to work groups
 Percent of work groups earning rewards
 Percent of reward funds paid out to work groups

While Table 16. 1 is by no means exhaustive, it should serve as an impetus for the design of specific collaboration performance measures for department and top-level managers. At a minimum, metrics should encourage the formation of work groups (defined here to mean two or more individuals working together on a common task who generally have computers connected to a network that allow them to send email to one

another, share data files, and schedule meetings 17), the integration of information system applications utilizing a central database, employee training, and reward systems. To keep the momentum going, efforts should also be undertaken to monitor the impact of internal integration on the firm's overall performance. Recent research in this area has shown that there is a direct and positive relationship between internal integration and firm performance.

18 When Illinois-based food manufacturer Quaker Foods and New York-based food and beverage company PepsiCo merged in 2001, a major hurdle was to create internal collaborations that supported their combined external supply chains. Karen Alber, vice president of integration at Quaker Foods, was selected to spearhead the effort. She did her job so well that she was later named one of "The 25 Most Influential Executives" in the industry. For example, Quaker was able to cut its inventory levels within its Canadian operations by 60 percent and paperwork by 77 percent.

19 Use of work groups or teams to integrate internal processes and improve firm performance has been described by many as a top priority. Previous studies regarding total quality management, quality circles, agile and lean manufacturing, and JIT have all found team work to be one of the common elements among successful companies employing these techniques. 20 Further, group performance has been shown to be impacted by the group members' abilities, their work environment, and their motivation. Maximizing the performance of teams should thus make use of worker skills, their tools, their shared goals and values, and their level of workplace comfort. This supports the use of the other performance measures shown in Table 16. 1.

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Finally, organizations should periodically assess not only the performances of their integration efforts, but the metrics being used as well. As the firm's internal and external environment changes, so too its performance measures must change. New employees, managers, and technologies will bring new skills to the organization, and new competitors, customers, and suppliers will provide new opportunities and requirements for the firm desiring to remain competitive. This will create additional opportunities for new internal integration efforts. The Active Internal Integration Phase

Firms that have been proactively involved in creating internal integration opportunities and practices will, at some point, reach a stage of development wherein internal process integration is a normal operating condition. This describes firms in the active internal integration phase, the second phase shown in Figure 16. 1. Integrated information systems will provide information visibility throughout the global organization to users at all functional levels; work groups will be common fixtures in the organization, including personnel from different departments and in geographically dispersed units as needs dictate. These groups will become successful at generating and meeting project objectives, and in identifying new opportunities for collaboration efforts. Automaker Ford Motor Company is on the cutting edge when it comes to use of information and communication technologies to connect workers within their many production facilities around the globe. Most employees are furnished with company laptops, a secure ID, and an Internet connection that allows virtual teams to communicate. It also allows access to Ford email, mainframe systems, and instant messaging worldwide, from the office or from home computers. And

for some, it allows phone calls to be made using Cisco's Internet soft-phones. Additionally, Ford has constructed its own digital fiber network, and planned to be able to deliver videoconferences within North America by the end of 2006, allowing it to hold virtual meetings. 21 Firms that are successful at internal integration have found that the key to building successful teams is in finding people with the right personal chemistry who can quickly develop trusting relationships. "Some of the worst teams I've ever seen have been those where everybody was a potential CEO," says David Nadler, CEO of the Mercer Delta global consulting firm, who has worked with top companies and their executives for over 30 years. Mutual trust is a fundamental element of a winning team, which explains why so many "dream teams" in sports and other areas have failed to accomplish much. For example, the U. S. baseball team assembled to compete in the World Baseball Classic in 2006 included such baseball greats as Roger Clemens, Derek Jeter, Alex Rodriguez, and Johnny Damon, yet they performed relatively poorly, losing games to Mexico, South Korea, and Canada. The 2004 U. S. Olympic basketball team consisted entirely of NBA superstars, yet it finished third and lost to Lithuania. In contrast, the 1980 U. S. Olympic hockey team was built explicitly by considering the personal chemistries of only college players (not necessarily the best players), and yet these amateurs beat the heavily favored Soviet team to win the gold medal. In still another example, Jack Welch, the legendary ex-CEO of the Connecticut-based global conglomerate GE, insisted that members of their Corporate Executive Council meet away from the corporate offices, have no prepared presentations, and wear informal clothing—he believed this allowed more realistic conversations to occur, and

trust to be formed within the council membership. 22 Organizations proactively involved in internal integration create opportunities for more and better collaborations between staff members. This may include designing facilities conducive to better collaboration; allowing staff to cross-train one another; creating opportunities to see other worker perspectives, make new acquaintances, and see the big picture; holding ad-hoc brainstorming sessions when challenging situations develop to encourage problem-solving skills and teamwork to develop among personnel; and recognizing and celebrating accomplishments when teams hit a milestone, by writing a story in the company newsletter, hosting a luncheon for the team and other employees, or simply putting up a commemorative plaque. The Aetna Information System facility in Blue Bell, Pennsylvania, uses space more efficiently to enhance collaboration. “ What our clients are asking us to do is find a way to make a hallway or lobby or gathering space do more than one thing,” says Carol Rickard, of Washington D. C.-based Little Diversified, who oversaw the design of Aetna’s offices. “ By increasing the width of a circulation hallway or space pocket, and placing soft seating and a teaming table there, we’re able to maximize the use of that space by creating an informal collaboration hub. We call it chair ballet. People literally wheel themselves over to the table and are able to meet.” 23 Forward-thinking leaders in the organization are at the heart of the development of a collaborative culture. They understand how to put teams together to take advantage of each member’s particular style and strengths; they provide for and ensure that team members are sufficiently trained and equipped; they foster a work environment conducive to trust and

productivity; and they provide adequate financial and time support. In a recent interview, William Donius, CEO of Pulaski Bank of Missouri, a top-performing bank in terms of return on assets, listed three things as most responsible for success at the bank—the recruitment of the best and brightest people at all levels, the offering of products that meet customer needs, and the creation of an environment where teamwork and collaboration are valued. 24 The Process Management in Action feature provides some interesting descriptions of how some companies are encouraging teamwork skills at meetings in Las Vegas, Nevada.

PROCESS MANAGEMENT IN ACTION—Teambuilding the Las Vegas Way Experienced meeting attendees can become immune to the idea of “teambuilding.” They’ve done it already, and it’s a real challenge to get them excited. So if beach Olympics, ropes challenge courses, and build-your-own-survival-rafts sound

like a laundry list of your latest team-building efforts, get ready to create some buzz in Las Vegas, Nevada. With one look at the astounding variety of diversions along the Las Vegas Strip, most meeting participants are instantly chomping at the bit to delve into the excitement. One of the best ways Sharon Geraci, president of Meeting & Incentive Management, has found to give them a taste of the diverse menu is the “Test Your Limits” teambuilding event. She presents the group with a collection of daring activities, each with a specific point value attached to it. The team decides together which elements to tackle as a personal driver takes them around town by limousine. Challenges could include anything from going to the top of the Empire State Building at New York New York to boarding (and riding, of

course) one of the heart-pounding thrill rides at the top of the Stratosphere Hotel's tower. "It's a really fun ice breaker," explains Geraci. "It's all about seeing Las Vegas and building camaraderie." Perhaps the biggest surprise about spending quality time soaring is what you don't get: noise. Peace and quiet is a big part of what the Soaring Center is all about, but the rare thrill of mastering the desert's air currents in a tiny, engineless plane is the real draw. "We can do loops and wing-overs, and if they want to take the controls, we'll put them in the front of the plane," says instructor and center owner Mike Henderson, who is sure to cater the flight to the individual rider. For teambuilding, many groups choose the company's ride on the popular The Amazing Race reality television show. It includes a five-hour soaring/ATV adventure for up to 30, where the participants divide their time riding above and below each other—and for the bravest of the group, there's a skydiving option. "They just think it's the coolest thing in the world," says Henderson. Some people may have heard of a Segway®, but few have actually taken a spin. That is precisely the appeal of Segway polo as a teambuilding activity. "Nobody else is doing it, and it's a very fun, interactive event," says Geoff Rhodes, director of creative event services for Ritz-Carlton, Lake Las Vegas, who creates teambuilding programs that his crew stages for groups throughout the Las Vegas area. Segway polo allows participants to play competitive polo without ever having to mount a horse, undergo formal coaching, or train for competition. Geared to all fitness levels (and all sizes between 100 and 250 pounds), the game uses Segway® Human Transporters and soft foam mallets and balls to play the traditional game. Rhodes' staff provides teams of 4 to 12 players with the

battery-powered Segway Human Transporters, polo equipment, helmets, lessons, and practice chukkers. The newest track in Vegas opened on April 10, 2006, and is offering thrill rides for visitors at the north end of the Strip. General Motors' "The Drive" offers two professionally-designed driving courses—including a high-performance loop and an off-road adventure over a dirt terrain. Groups can check out the performance course, a half-mile paved route with jogs and turns that highlight both the speed and handling control of pure sports car driving. Vehicles available to unleash on the performance course include the Corvette, the Pontiac GTO, the 400-horsepower Cadillac CTS-V, and more. Participants who choose the off-road course will be handed the keys to a Hummer or their choice of several Chevy, GMC, or Cadillac trucks and select SUVs. The food craze has run rampant in Las Vegas, and groups have been clamoring to get into the kitchen. Enter Bellagio Resort and its Tuscany Kitchen, designed specifically for culinary-based teambuilding events. The 1, 170-square-foot venue is the first of its kind in the city, an intimate environment for 18 people that can be expanded for up to 60 people by using two drop-down video screens that keep the back rows close to the action. Bellagio's award-winning chefs lead the fun during a program that can focus on anything the group wants, from how to prepare a specific style of cuisine, such as Japanese, Italian, or Chinese to setting up a friendly competition, a la the Food Network's popular Iron Chef. Source: West, E., "Take One for the Team," *Successful Meetings*, June 2006, pp. 22-23. Copyright © 2006 VNU Business Media, Inc. Reprinted with permission.

The third and final phase of the process integration model shown in Figure 16. 1 is the active external integration phase. This phase is discussed in detail in the following section.

EXTENDING INTEGRATION TO SUPPLY CHAIN TRADING PARTNERS

In the most advanced stage of the integration model, the firm's abilities to integrate internally have matured, creating successful process collaborations between personnel throughout the firm. As the firm witnesses these successes and realizes the value inherent in process integration, the desire to collaborate and integrate processes with supply chain trading partners also grows. Hopefully, during this maturation phase, the firm is discovering high-performing suppliers, and is also becoming a valued supplier to its customers. It is at this point that the firm is prepared to begin actively managing its supply chain through use of external process integration. Revisiting the ultimate goal of supply chain management—to provide end users with the products and services they desire, at the right levels of price, quality, and service—it follows that firms actively managing their supply chains must become adept at internal process integration and extend the boundaries of the firm through the integration of key processes among supply chain trading partners. Once the firm has set in motion the activities to achieve internal process integration, it can then turn its attention towards external process integration. External process integration can be an extremely difficult task, even more so than internal integration, since it requires, first and foremost, willing and competent trading partners, mutual trust, and potentially a change in one or more organizational cultures. However, the benefits of supply chain collaboration and information

sharing can be significant: reduced supply chain costs, greater flexibility to respond to market changes, less supply chain safety stock, higher quality levels, reduced time to market, and better utilization of resources. Through the practice of collaboration, information sharing, and process integration, supply chain management can become a core competitive strength for the firm and its trading partners in the supply chain. The Global Perspective feature profiles Metro Cash & Carry Vietnam, a good example of a company capitalizing on its external integration opportunities with only limited use of technology.

GLOBAL PERSPECTIVE—Metro Cash & Carry Vietnam: Keeping Collaboration Simple Successful collaborative relationships can be created using relatively simple but effective practices. And they can be found in some unusual places. Consider the case of Metro Cash & Carry Vietnam, which has developed long-term collaborative relationships both with its local vegetable suppliers and with a major hotel customer in Ho Chi Minh City. These collaborative relationships involve basic information-sharing and coordination practices, which have led to more efficient produce distribution and more satisfied supply chain partners. Metro Cash & Carry Vietnam is a German-owned business-to-business grocery wholesaler specializing in services to hotels, restaurants, and catering institutions. The company's main strategy is to be cheaper than its competitors in the traditional wholesale markets while also focusing on food safety and customer satisfaction. According to Metro managers, the company's success is closely linked to its strategy of building long-term supply relationships, especially with local producers of fresh vegetables. These relationships are

based on trust. To gain that trust, potential suppliers, for their part, must show that they can deliver high-quality produce regularly and be responsive to fast-changing customer demands. Metro looks for financially stable suppliers with proven experience in vegetable production and a reputation for produce quality. Trust is built mainly on results. Metro will start sourcing from potential suppliers little by little to check the regularity of quality. This reliability is important. Fresh produce buyers at Metro receive many offers from local suppliers, but a supplier that consistently provides good quality and low price in a stable manner throughout the year is difficult to find. At the same time, Metro also needs to acquire the trust of its suppliers. One way it does this is through establishing secured payment in the supply contract. Although there is a fixed delay in payment, which can go up to 30 days, the company rewards a successful supply relationship by lowering the delay after a period of satisfactory deliveries. These trust-based relationships rely on the exchange of transparent market information between suppliers and Metro buyers. Metro's individual fresh food buyers are responsible for maintaining good interpersonal relationships with all regular suppliers. This means not only communicating frequently with suppliers by telephone and fax but also physically visiting suppliers several times each month. Metro has even purchased fax machines for those suppliers that did not have one. Although the communications may seem low tech, they have proven to be very effective. According to the stakeholders themselves, the focus on communications and product quality has had a positive impact on supply chain performance. From the viewpoint of the suppliers, Metro's focus on higher-quality vegetables brings them greater stability in orders and prices.

These suppliers also gain greater risk avoidance through the company's guarantee of payment.

Finally, because reliable quality produce is still relatively difficult to find in Vietnam, established Metro suppliers that focus on quality have a certain power in negotiations with the wholesaler. Trusting relationships are time-consuming to build and regular suppliers are difficult to find in Vietnam. So once a supply relationship is established, it is important for Metro to keep it because of the investment made. Therefore, best-performing Metro suppliers can be assured of a long-term commitment by the distributor. Collaboration doesn't end with Metro's suppliers; it extends to customers as well. The company's relationship with the New World Hotel, a five-star property in Ho Chi Minh City, offers an excellent example. The two companies agreed in 2002 to experiment with a strategic alliance whereby Metro supplies most of the hotel's needs. As a result, more than 97 percent of the hotel's purchases come from Metro. The partnership is based on strong collaboration and information sharing in order planning and replenishment. Both companies have assigned a dedicated staff member to manage this strategic alliance: a key-account manager at Metro and a procurement manager at the hotel. The hotel purchasing manager can call the Metro key-account manager at any time during working hours for an emergency delivery, and Metro will deliver immediately, even during weekends. Furthermore, Metro always sends a member of its sales staff to the New World Hotel to supervise each delivery and assess its quality with the hotel's staff. The New World Hotel orders