

CASE

S&OP "Evolution" at Adtran

Adtran is a \$500 million designer and manufacturer of componentry for the telecom industry, headquartered in Huntsville, AL. Adtran's case was typical in that it often takes a crisis or "wake up" moment to lead fundamental change; in Adtran's case, that was rising inventories and decreasing customer satisfaction that reached levels that required a change. That situation was driven in large part by the complex environment the company faces: short product life cycles, difficult to forecast products, many engineering changes, short order delivery cycles with long supplier lead times, little or no ability to "shape" demand. Combined with forecast accuracy of less than 50 percent, and "we had a 'perfect storm' that was leading to hits on the bottom line," Dadmun said.

Particularly vexing were the various "walls of silence" that restricted the flow of information; for example, little or no information about why the forecast was missed. "We'd ask, 'Why did we miss the forecast?'" Dadmun said. "'Because customers didn't order' would be the response. But why didn't they order? That we didn't know."

There were also walls of silence between the supply side and marketing, and the supply and sales side and engineering. "Only engineering really knew what dates they were going to hit in terms of new product introductions," Dadmun noted. "Often, we were building supply capabilities and revenue plans that didn't reflect the true schedule."

Source: SC Digest, "Thomas Dadmun VP Supply Chain Operations Adtran," News and Views, www.scdigest.com/assets/newsviews/05=10=28=2.cfm, October 28, 2005.

Faced with this situation, Dadmun helped drive a number of initiatives to improve results. This included forming a multi-functional team across supply, sales, marketing, and engineering to look at the problem; investing in new supply chain technology; and ultimately starting an effective S&OP process.

There were some key moves. First, to get buy-in, Adtran worked with the vendor (i2) to back-test forecasting results with its demand planning tool for 20 of the company's top SKUs over the past 2–3 years. The surprising insight: the tool's base line forecast simply based on history, etc. was better for 18 of the 20 SKUs than the forecast team's results—an observation that quickly generated interest and support from execs and others.

Adtran also brought in some outside consultants to help them benchmark against best practice in the area. This also worked to show Adtran execs that they were not operating at close to an industry-leading level. "It delivered a wake-up call," Dadmun noted.

Dadmun also helped convince the organization that while an improved baseline forecast coming out of a new demand planning tool would help, it wasn't enough. "That's still a rear view mirror view," he commented. "You need additional input from sales, marketing, and engineering to see the upcoming curves and exit ramps."

The S&OP "evolution" at Adtran is designed in three phases.

Phase 1 (complete):

- Implement supply-side technology to better understand supply capacity and constraints
- Implement demand planning technology
- Launch an integrated S&OP process, with goal of developing a true consensus forecast and integrated financial plan
- Assignment of "process captains," now out of sales/marketing, for each division
- Use of a pre-meeting before the actual S&OP meeting to review the data, work out issues, identify other needed information, etc. so that the main meeting can focus on building the plan
- Focus on "exception management"

Phase 2 (in process):

- Use of an online S&OP "dashboard" that provides a detailed view of forecasts and actual results, and allows rapid drill down into supporting information
- Focus on identifying when and how the forecast and plan went wrong
- Further reduce the "walls of silence" through both process and technology

Phase 3 (planned):

- Facilitate more true root cause analysis, especially in trying to learn at a detailed customer level why a forecast was inaccurate.

Among the real keys to achieving S&OP success is "to really start with the end in mind," Dadmun noted. "You really have to define what you want to come out at the end. This is essential, and not as easy as you might think."

Other Lessons Learned Include:

- There is no change without some suffering—be prepared to have poor processes and results exposed to execs and peers
- Develop early proof points, perhaps in a pilot mode, to create buy-in
- Benchmark to be able to say "I've seen it done."
- Use some outside experts/consultants—if this is new territory for your company, partner with others that have been down the path
- Work hard to develop other internal champions besides yourself
- Celebrate success—when one planner hit 72 percent accuracy, the highest level, they took the whole team out to dinner

"We have to be able to get to the point where we can drill into the demand side of the equation with the same level of detail and insight that we can on the supply side," Dadmun added.

The Adtran case study is typical of current S&OP practices, which focus on demand planning, bringing together sales and marketing to agree on a forecast, and meetings that enable balancing production capacity with demand.

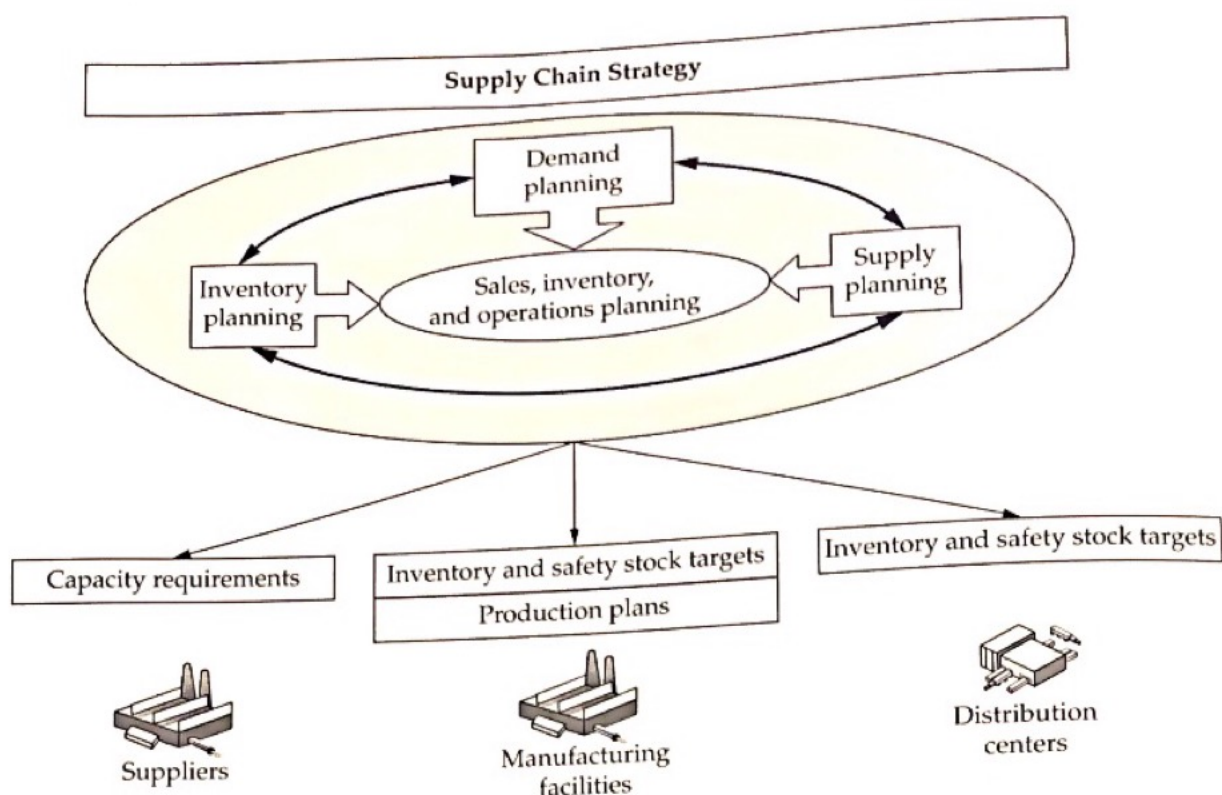


FIGURE 14-11 Advanced S&OP process.

Obviously, achieving the level of S&OP process success described in the case of Adtran is quite challenging. Still, the process does not include optimization, inventory considerations, and what-if capabilities and is not tied to ERP/APS solutions, since it was mostly executed through spreadsheet analysis. However, in most cases, data are too complex and there are too many options to analyze in a spreadsheet and there is a need to create a repeatable and visible process that is integrated with ERP systems. Therefore, there are opportunities to deploy IT to support the process.

Recently, a new phase of S&OP has emerged. In this phase, S&OP is aided by new technology platforms that allow easier integration of data and the ability to optimize and not focus solely on the forecast. Figure 14-11 describes the way a \$5 billion manufacturer sees its S&OP process and is using its SAP implementation to deliver this system. The key is the integration of the different activities into the S&OP process. The first element is the traditional demand planning for product profiling and forecasting. The second is the supply planning for internal and external capacity checking. The third element is inventory planning to determine overall inventory targets and perform safety stock optimization and service level optimization. S&OP is focused on alignment of supply and demand as well as direction setting.

Integrating these processes is a challenge that many companies have and where new technologies for business process management and composite application described in Chapter 15 will have an impact on a company's capabilities.

14.6 INTEGRATING SUPPLY CHAIN INFORMATION TECHNOLOGY

How do all the elements of information technology (IT) come together? Supply chain management is extremely complex, so there is no simple or cheap solution to the issues we have raised. Many companies do not think it is cost-effective to introduce certain IT innovations because they are not sure there will be a significant return on

investment. Trucking companies do not purchase sophisticated tracking systems because few clients would actually want to receive such detailed information. Warehouse managers do not invest in RFID technology because it is too expensive.

The key is to analyze what each component can contribute to the enterprise and then plan the investment according to the specific needs of the company and the demands of the industry. It should be noted, however, that the holistic solution is frequently greater than the arithmetic sum of the parts—that is, installation of a warehouse control system and a transportation management system can do wonders for customer service performance.

Companies need to decide whether to automate their internal processes or agree to some industry conventions—which usually happens when investing in an ERP system from one of the major vendors (e.g., SAP and Oracle). As more and more companies share information such as order entry, requisition, bills of material, and so forth, and take part in joint planning, one can expect standard approaches to sharing this information will lower everyone's cost of doing business. In supply chain management, no single standard has yet emerged, as each ERP vendor continues to set its own de facto standards.

In the next section, we discuss implementation of ERP and DSS. What are the priorities in implementation? What should a company invest in first? Finally, we will review the “best of breed” compared with the single-vendor package dilemma and illustrate the dilemma through the case studies in this chapter.

14.6.1 Implementation of ERP and DSS

Implementation of a system that supports supply chain integration involves infrastructure and decision-support systems. The ERP systems that are typically part of the infrastructure are different in many ways from the supply chain DSS. Table 14-2 compares enterprise resource planning (ERP) and decision-support systems based on various implementation issues.

The question is what strategy should a company use in deciding what system to implement and when. The IT goals for supply chain management, described in Section 14.3, suggest that a company first must install an ERP system so that the data will be accessible and complete. Only then can it start analysis of its entire supply chain processes using various DSS tools. This may be the ideal, but in reality the data needed to achieve supply chain efficiencies already exist—maybe not in a single easy-to-access database, but it is worth the time it takes to assemble the database compared to the cost of waiting for installation of the ERP system.

These issues are illustrated in Table 14-2. An ERP implementation is typically much longer than a DSS implementation. The value of an ERP system to the enterprise involves the first two goals—visibility and single point of contact—and, while these can imply improved operations, DSS impact the ability to perform strategic and

TABLE 14-2

ERP AND DSS FOR SUPPLY CHAIN MANAGEMENT

Implementation issue	ERP	DSS
Length	18–48 months	6–12 months
Value	Operational	Strategic, tactical, operational
ROI	2–5-year payback	1-year payback
Users	All end users	Small group
Training	Simple	Complex

TABLE 14-3
PRIORITIES WHEN IMPLEMENTING DSS

Industry	DSS
Soft drink distributor	Network and transportation
Computer manufacturer	Demand and manufacturing
Consumer products	Demand and distribution
Apparel	Demand, capacity, and distribution

tactical planning as well. This means that DSS projects have a much better ROI. Finally, DSS installations are typically cheaper and easier to implement and they affect a smaller number of highly trained users compared with those of an ERP system, which has a large number of users who require less extensive training.

Indeed, as we saw in the Whirlpool case study at the beginning of this chapter, companies do not necessarily wait for an ERP implementation to proceed with DSS implementations. Indeed, in many cases it makes sense to first deploy a DSS that provides a more immediate and observable return. Of course, companies examine their financial and human resources before they decide on the order and the number of projects they will tackle at a time.

The type of DSS implemented depends on the industry and the potential impact on the business. Table 14-3 includes some examples from various industries. In the soft drink industry, where distribution is a major cost factor, priorities are different than those of a computer manufacturer, which has a complex manufacturing process with many different products and whose distribution cost is only a fraction of product cost. Thus, in the latter case, the manufacturer can utilize expensive shipping solutions.

14.6.2 "Best of Breed" versus Single-Vendor ERP Solutions

Supply chain IT solutions consist of many pieces that need to be assembled in order to achieve a competitive edge. They include infrastructure (ERP) and various systems to support decision making (DSS). Two extreme approaches can be taken: The first is to purchase the ERP and supply chain DSS as a total solution from one vendor; the second is to build a "best of breed" solution, which purchases the best-fit solution in each category from a different vendor, thus producing a system that better fits each function in the company. While the best-of-breed solution is more complex and takes longer to implement, it may be an investment that provides greater long-term flexibility and better solutions to the company's problems. Of course, the long period of implementation also can cause the solution to be less useful at the end and cause difficulty maintaining IT staff and enthusiasm for the project. Many companies choose an interim approach that includes a dominant ERP provider; the functionality that cannot be provided by the vendor, or does not suit the company, is provided through best-of-breed or in-house systems.

Finally, there are companies (e.g., Wal-Mart) that still prefer in-house, proprietary software development [36]. This probably makes sense for extremely large companies with expert IT departments and systems that already serve the company well. More recently, with the advent of new technologies discussed in Chapter 15 that provide easier business-oriented development and integration, there may be a push back toward more internal or software integrator development rather than reliance on ERP vendors.

Table 14-4 summarizes the pros and cons of these ERP versus best-of-breed approaches.

TABLE 14-4
"BEST OF BREED" VERSUS SINGLE VENDOR AND PROPRIETARY

Implementation issue	Best of breed	Single vendor	Proprietary
Length	2–4 years	12–24 months	Not known
Cost	Higher	Lower	Depends on expertise
Flexibility	Higher	Lower	Highest
Complexity	Higher	Lower	Highest
Quality of solution	Higher	Lower	Not sure
Fit to enterprise	Higher	Lower	Highest
Staff training	Longer	Shorter	Shortest

SUMMARY

Success in supply chain management IT depends on a combination of applying business processes and new technologies in a way that is most effective for the business. We show evidence that companies who apply both business processes and technology outperform their peers.

We identified the four major goals for IT:

1. Information availability on each product from production to delivery point.
2. Single point of contact.
3. Decision making based on total supply chain information.
4. Collaboration with supply chain partners.

How are the four major goals achieved? More importantly, what is the impact of achieving these goals on the logistics manager?

First, standardization of processes, communications, data, and interfaces brings about cheaper and easier methods to implement the basic infrastructure. IT infrastructure will become more accessible for companies of any size and in the future will work across companies in an almost seamless way. This will allow access to IT and integration of the systems at every level of the supply chain—therefore, there will be more information and tracking of products at each level. New technologies such as RFID will allow products to be tagged and tracked through the supply chain and will be as easy to locate as a Federal Express package.

Second, data display and access in various forms are becoming more integrated in systems that do not require any specialized knowledge. This makes system interfaces more intuitive and relevant to the task at hand. Portal interfaces described in this chapter are one such example.

Third, various systems will interact in a way that will blur the current boundaries; SOA will allow easier integration and, as a result, systems purchased as “best of breed” by different people at various levels in the organization will become better integrated and use common interfaces. Similarly, there will be a proliferation of applications that can plug into a company’s enterprise system to provide specialized functionality. The third goal will be achieved through development of decision-support systems and intelligent agents that are more sophisticated, rely on real-time data, and are interoperable.

Finally, electronic commerce is changing the way we work, interact, and do business. E-commerce provides an interface to businesses and government that allows meaningful data comparison, and transactions that follow through with error checking and correction capability. It enables access to data that exist in government, educational,

and private databases and the ability to modify or correct these data. Private (and public) e-marketplaces now allow buyers to integrate their suppliers into their information systems.

In the future, businesses will be able to expand their intercompany transactions into more sophisticated applications that can perform some basic processes and pass the information on to other applications. In a process as complicated as supply chain management, systems that not only perform their own function but also alert others in the system will be especially beneficial to fulfill the four goals we have outlined.

These topics are addressed in detail in Chapter 15.

We end with a quote from Lou Gerstner, former IBM CEO (see [127]): “The payoff from information technology is going to be in making transactions and processes more effective and efficient, so it’s not about creating a new economy, it’s not about creating new models of behavior or new models of industry. It’s about taking a tool, a powerful tool, and saying, ‘How can I make my supply chain more effective and efficient, how can I make my purchasing process more efficient, how can I make my internal employee communications more effective and efficient, how can I as a government deliver services to constituents more efficiently and more effectively?’”

DISCUSSION QUESTIONS

1. What are the major challenges facing supply chains that can be aided by IT?
2. What is the impact of business processes on supply chain management IT?
3. How can ERP vendors take advantage of Internet technology?
4. Compare the capabilities required to achieve supply chain excellence (see Figure 14-10) according to
 - a. Decision focus.
 - b. Data aggregation level.
 - c. Time to implement.
 - d. The number of users involved in the analysis.

**DESIGNING AND MANAGING THE SUPPLY CHAIN: CONCEPTS, STRATEGIES,
AND CASE STUDIES**

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