Sales and Operations Planning

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Sales and Operations Planning Overview

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Overview

High performing manufacturers know that costs are lowest, on-time shipments are highest, and inventories are most strategically deployed when demand and supply are properly balanced. For this to happen effectively, a handshake between sales, production, procurement, finance, engineering, quality, and human resources is required on a periodic and formal basis. Sales and Operations Planning (S&OP) has become the widely accepted top management method for making timely proactive resourcing decisions for labor, fixed cost, capital, and key materials for balancing demand and supply. Recently, many manufacturers have discovered the power of this practice and are successfully applying it to lower cost, provide the best service, and minimize investment. This paper addresses the "what", "who", "when", and "how" for S&OP.

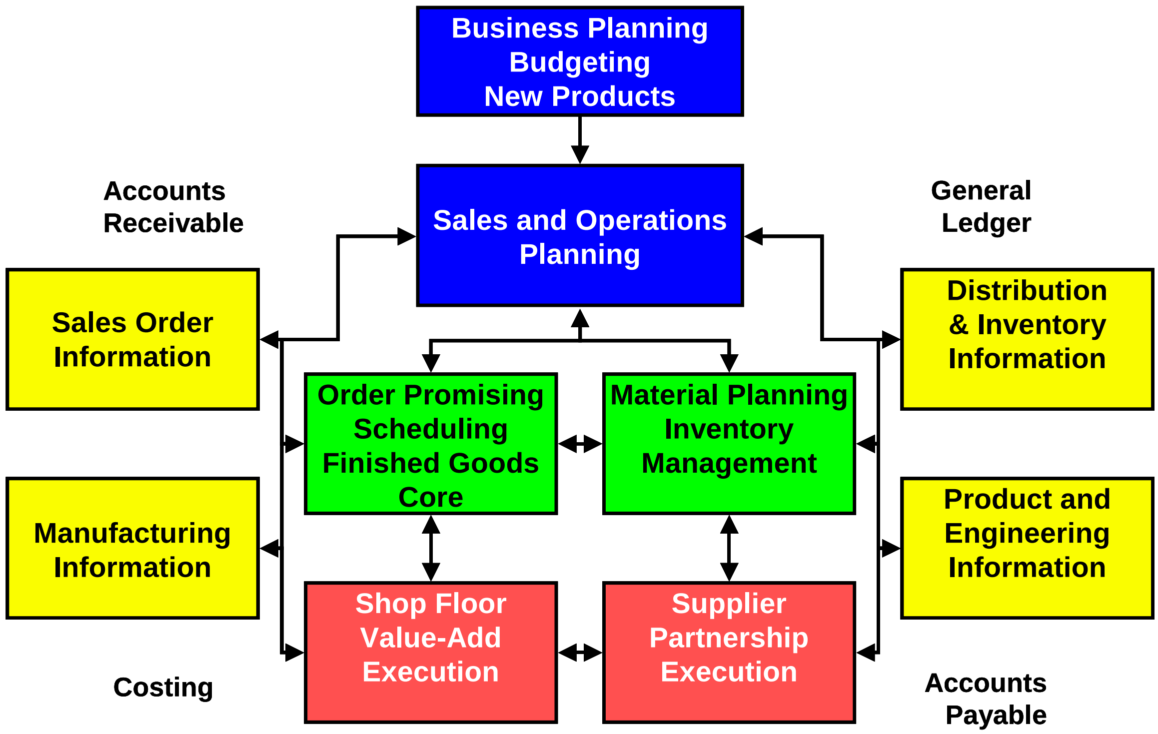
What is S&OP?

S&OP is a monthly formal balancing of supply and demand through a six to twelve month planning horizon by aggregate product families. It generally includes incoming orders (bookings), backlog, shipments, finished goods inventory, production, and capacity projections in monthly time buckets. It is conducted in a very prescribed format by the top management team. This is a critical point: top management. Any company, which embraces this process, must engage the President and direct reports. Otherwise, there will be a disconnect between their wishes and the information on the formal S&OP document.

S&OP is not a scheduling tool! It is not an inventory replenishment tool! It is, however, a top level planning technique to provide overall rates of sales and production, and backlog and finished goods inventory positions. In a cellular or flow-line based operation, S&OP provides the "daily run rates" for these lines.

S&OP is the key business process that derives from the strategic plan, and from which scheduling, order promising, materials, shop floor control, purchasing, and many other processes derive. Another way to think about S&OP is in terms of a very well organized communication process for the top management team. As an executive once said, "the forecast will never be perfect, but we all have the right to know what we all know". We will use the following Business Enterprise Model as an anchor for this entire thought process.

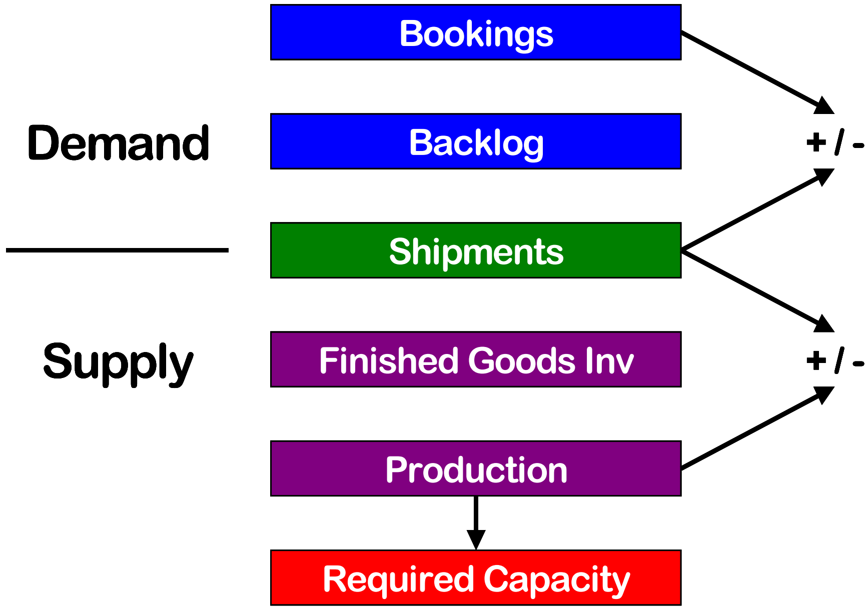
Business Enterprise Model



S&OP is only one "box" in the process. The green boxes … operational detailed planning … derive directly from S&OP. The red boxes … detailed operational execution … also derive indirectly from S&OP. The yellow boxes contain the data that feeds the entire business process … and these data must be flawless. If you think that isn't possible, just examine your payroll system and repeat the steps that make it nearly perfect for the other data bases: customer orders, inventory records (on-hand and purchase orders), manufacturing information (routings, work centers, and work orders) and product information (bills of material, costing, and the item master).

This paper is focused only on the S&OP box. The others are topics for discussion another time.

The following diagram shows how the six key elements of S&OP interact: bookings, backlog, shipments, finished goods inventory, production, and capacity. For S&OP to work correctly, the arithmetic relationships must be maintained for future planning, and the "actuals" for specific points and ranges of time must be available. Also, very specific definitions are required. For example, 'when is an order and order?' 'When is production production?' 'When is a shipment a shipment?'



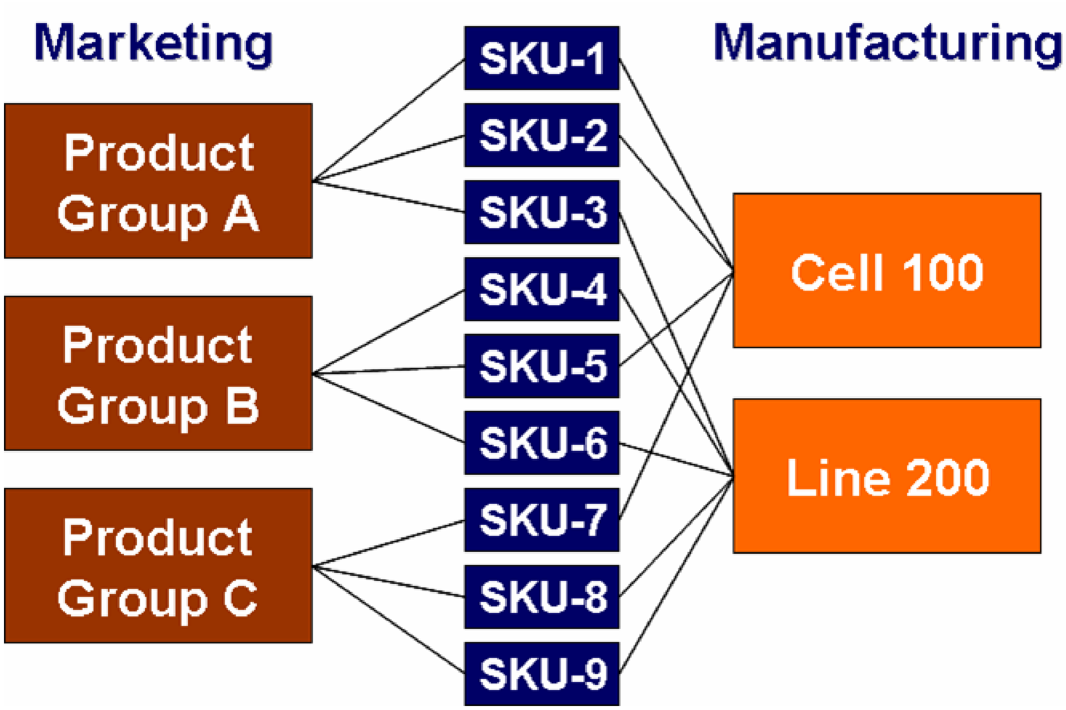
Why is S&OP Important?

The major objective of S&OP is to provide a "one plan" planning process that connects all functional areas of the business from top management to the shop floor on a regular basis. In its absence, each functional area is likely to have plans that are disconnected at best, and in absolute conflict at worst. It is this objective that makes S&OP the tool that connects top management planning seamlessly with day-to-day factory execution. THIS IS A HUGE BENEFIT! Without this connectivity, the factory will often run to a set of assumptions that are extremely disconnected from the top management team. Purchasing will commit money, and manufacturing will position people and equipment in a way that can easily be way out of sync with demand, inventory, and backlog objectives.

Think of S&OP as the top management process that formal glues the team together … transforms the team from finger pointing and distrust to a team based on handshakes and trust.

The Basis for S&OP

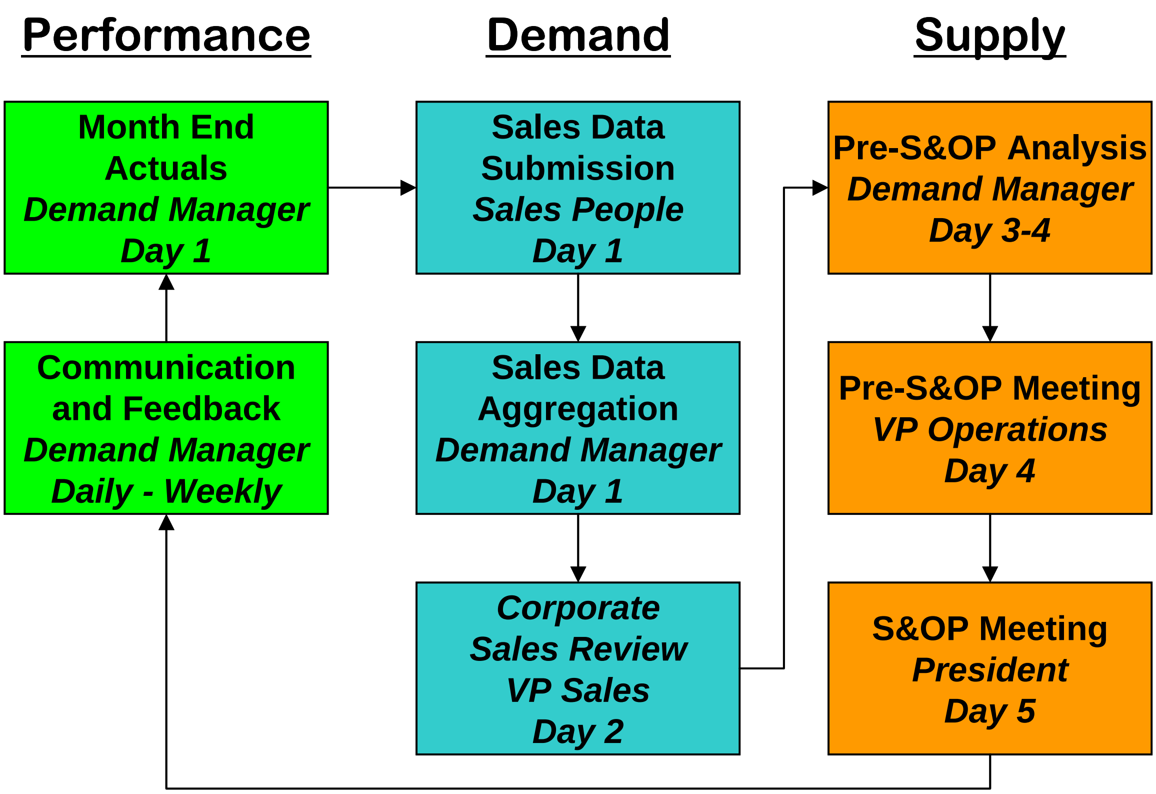
S&OP does not deal with data at a detailed level but rather at an aggregate level, so family groupings must be established for data aggregation. There will be one set of groupings for sales and marketing and one for manufacturing. It is the way that these two functions look at the business. To present information in these two ways, data elements must be associated with each end items SKU which code the sales/marketing and manufacturing categories. These groupings for sales/marketing are based on product catalog organization or some other natural product collection. For manufacturing, the grouping is based on the cell or line where the product is produced in the factory. This is called mapping items to lines. The following diagram shows the aggregation concept.



For example, SKU 1 carries a marketing product grouping of “Group A” and a manufacturing grouping of “Cell 100”. This enables information to be grouped for sales/marketing use and for manufacturing use.

How Is S&OP Done?

There are eight primary steps in S&OP as shown in the following diagram. Each box shows the basic activity, who is responsible, and the timing. For example, Month End Actuals and collected by the Demand Manager on Day 1 of the planning cycle. The process works the best in terms of calendar management and cutoffs when a 4-4-5 strategy is used. This way, the month always ends on Friday, and all of the S&OP activities occur on the same day of the week in each planning cycle.



Step 1 - Month-End Actuals (Day 1)

At the close of business, actuals for the month are collected. These include shipments, bookings, production, backlog, and inventory. The data must be available in groupings as described earlier: sales/marketing and manufacturing. And the actuals must be available in units and dollars.

This is a critical step in the process. Many companies think that this already exits … but it may not. A simple test is to ask three people (VP Finance, VP Sales, VP Manufacturing) a simple question: 'what was sold last month?' There is only one answer to this question. But see how many you get! Plus, the answer must be available in precisely the product groupings that are agreed upon for the basis of the S&OP process.

Special care must be taken to capture finished goods inventory and backlog. These numbers are perpetual and change as shipments, bookings, and production are transacted. To capture these actuals each month, a clean cutoff process must be in place. The "end-of-the-month" must be carefully defined. The finished good inventory and backlog numbers must be collected in accordance with the cutoff process and reported/recorded for use in the S&OP process.

The other three actuals (shipments, bookings, and production) are transaction based. They carry a date in the transaction history meaning a period of time can be specified and captured at any time.

Getting the monthly actuals is the responsibility of the demand manager, and sometimes is trigged by automatically by the information system.

Step 2 - Sales Data Submission (Day 1)

In any company, there is a group of people who are "front line" with the customer base. Normally theses are sales people. The sales organization can consist of company employees, outside reps, or both. The sales force is generally organized around customers, geographical territory, products, or combination of these.

In S&OP it is the job of this sales organization to answer three very fundamental questions:

> What are we going to sell?
> What did we sell?
> What is the reason for the difference?

To ask these questions, the company must first decide "to whom" we are going to ask the question, and "who" is going to do the asking. Normally, only company employees are asked the question. In a rep environment, company people are assigned rep accountability. The person doing the asking is the VP of Sales, or the President (in smaller companies).

The second thing to decide is form of the response. Is SKU detail needed? Is the data organized by product? What are the time buckets? Usually, sales people think in terms of key accounts or in geographic terms, and in dollars rather than units. Therefore, to make the process viable, a good starting point is to ask each sales person the dollar volume of sales by each key account by month for the next three months, and by quarter for the remainder of the year. This is much better than asking how much of each SKU will be sold by week for the next year! This approach drives the production people nuts … not enough detail, they say. However, we have demonstrated over the years that this aggregate approach provides enough detail to set aggregate production plans and inventory positions.

In a make-to-order business, sales are usually forecast in terms of incoming orders, and in a make-to-stock business sales are often forecast in terms of shipments. Either way, it is important to decide!

Each month … normally near the end of the month … each sales person will provide data on what will be sold in terms similar to those listed above. It's quite easy. It's something they think about anyway. This step in the S&OP process is only accountably formalizing and formatting what most companies already do.

Step 3 - Data Aggregation (Day 1)

This is largely a clerical step. It involves taking the data provided by each sales person and combining it in a fit-for-use condition. The objective is to aggregate the data by customer, region, and/or product family. It is done monthly immediately after the data has been submitted.

Step 4 - Corporate Sales Review (Day 2)

Once the data is fit-for-use, the VP of Sales can meet with the sales team and review the sales forecast. Here, judgment is made in terms of the total numbers being too high, too low, or just right. Adjustments may be made based on the most current business assumptions. It is desirable for each individual who answered the first question in step one to participate in this process. This way, they know the impact of adjustment decisions on their piece of the pie.

The meeting agenda in summary looks like this:

1. Review last month's performance by sales person. (Did we sell what we said, and why the difference)
2. State the outlook for the next three months and for the year by sales person. Aggregate the outlook by product.
3. Review all assumptions on which the forecast is based.

The whole meeting, when done properly, takes about two hours per month.

Step 5 - Pre-S&OP Analysis (Days 3 & 4)

Pre-S&OP is the preparation work that takes place ahead of the S&OP meeting. It is generally done by the Demand Manager.

Pre-S&OP begins by posting the actuals for sales, production, inventory, and backlog from the previous month. Remember, this is not a financial closing! At the end of the month, the business system should easily be able to provide data on what was sold, produced, and in inventory. If not, you have a system problem that should be resolved at once!

The next step is to use the sales forecast to create the production plan, finished goods inventory plan, backlog plan, and capacity plan. The demand manager will do some analytical work to determine run rates by line based on the sales forecast and inventory/backlog objectives. Often, people from materials, factory supervision, purchasing, and accounting will get together to grind through this detail.

There is an interesting transition that occurs here in terms of changing the way sales people think (accounts and territory) to the way factory people think (cells and lines). To accomplish this, each SKU must be mapped to sales and factory thinking. This is where correct set-up of the ERP system is critical. Otherwise, the data management problem is costly and slow … no reason for this in today's computer world!

The output of Pre-S&OP is a plan suitable for the top management team. It normally contains all of the detail, plus a summary in terms of aggregate data groupings along with what has changed from last month.

Step 6 - Pre-S&OP Meeting (Day 4)

The Pre-S&OP meeting is where the Demand Manager's recommendations are reviewed by the VP of Operations, Plant Managers, the Materials Manager, and other interested supply side players. Concerns, issues, and decisions are worked out. Quite often, several iterations of the numbers are generated real-time in the meeting to assess capacity and materials issues. The meeting takes about two hours and is chaired by the VP of Operations.

Step 7 - S&OP Meeting (Day 5)

The S&OP meeting is chaired by the President and attended by his/her staff plus the Demand Manager (or person who puts the detail together). The drill is quite simple … the people in the room who are accountable for performance simply speak to:

1. What did we say we would do?
2. What did we do?
3. Why the difference?
4. What is the outlook?

Interestingly, this is the part that many companies don't have the guts for. It gets a bit intimidating sometimes for people to speak to their number and take accountability. But that's what they're there for … isn't it?

There are a variety of ways to arrange the agenda, but a typical one look like this:

1. Review last month's performance by functional area by product (sales, inventory, production, backlog). This may be two or more people depending on how the accountability is distributed.
2. Discuss the outlook for each product (sales, inventory, production, and backlog). Again, two or more people may speak.
3. Review the actions and assumptions.

When done properly, this will take about 2-4 hours per month. The output is a one-plan process from which all detailed planning will derive.

Step 8 - Communication and Feedback (Weekly)

Each person who says "here is what I am going to do" in terms of sales, inventory, production, or backlog, must be provided regular and meaningful feedback in a fit-for-use condition. This shows performance to plan and helps them decide what must be done to achieve the plan.   Notice, this is not an exercise in changing the plan … it is the activity of achieving the plan. This is another huge concept for people to understand.

Another key aspect of feedback is that it must be provided precisely in the same format that the plan was presented. This is being fit-for-use. If people must manipulate data to make sense of their performance, the data will not be used. In today's age of ERP systems and computer power, it is absolutely expected that people can get feedback exactly as they need it when they need it. No post processing required! For example, if I (as a sales person) say I'm going to sell a certain amount to certain customers of a given product during a period of time, the feedback should show precisely if I'm doing that or not.

Feedback must be timely and fit-for use! It is only with precise feedback that performance will improve!

Remanufacturing Aspects of S&OP

In a remanufacturing operation, two additional elements are typically introduced into the S&OP process: core requirement and seed requirement.

<u>Core Requirement</u>

Once the total production plan is established for a product family, the amount of required core must be determined. This is usually in the form of additional lines on the S&OP document. These lines are:

- Gross Core Requirement
- Core Due In
- Net Core Requirement

The gross core requirement may be more than the production plan if it takes more than one core (on average) to produce a reman end item. For example, it may take 125 core to yield 100 reman end items based on a key component constraint.

It is critical to know who is accountable for the performance of these three lines, and for speaking to them in the S&OP meeting. "Who is accountable for core management?" is the question. If no one is accountable, then this planning will be overlooked. So the core management activity must be owned by a person (or several people by product in bigger operations).

<u>Seed Requirement</u>

If there is not enough core to support the production plan, new end items are quite often offered for sale as reman items, and at the reman price. This is seed at the end item level, and should be a line on the S&OP document by product line, which shows the financial commitment, needed to support production. Seed at this level is common in the early life cycle of a product before the field becomes populated with core.

Seed is also necessary at the component level if "new" end items are built in the reman operation essentially of new components. Again, this is due to core shortages.

If a core shortage exists, a decision must be made to "seed", to drop the production requirement, or to buy core on the open market. The ultimate decision must be reflected in the S&OP document to drive the detailed planning of all functional areas.

Common Mistakes

Here is a list of mistake that companies commonly make. Avoid these and your chances for success will increase!

- The wrong people are involved ... two plans!
- Accountability is avoided … no guts!
- Data is unavailable.
- Too much detail is chased.
- Formats are sloppy.
- No feedback occurs. Or it is untimely and not fit-for-use.
- The process occurs too late … often tied to financial closings.
- People don't know when things are to be done.

Keys for Success

- Get the right people as active participants in the process. Showing up is 90% of success. THIS IS HUGE!
- Make sure each person knows what he or she is accountable for, are prepared, and speak to his or her numbers.
- In the initial going, there is typically some "data trauma". People will argue and be confused about the numbers. Be patient … you'll work through this in a few months.
- Keep the data at an aggregate level … this is not a scheduling exercise!
- Be very particular about format perfection. Data must be presented in a fit-for-use condition.
- Ensure that feedback (actual vs. plan) is exact and available on demand.
- Conduct the process early in the month … you have a better chance for making adjustments, and reviewing last month's performance is still relevant.
- Publish an annual S&OP calendar showing who is doing what on which dates. Plan other activities around S&OP.

How to Get Started – The Checklist

The following checklist is designed to help get a formal S&OP process started.

✓ Decide that you are going to do it and get the right people are involved.
✓ Educate all on the "what and why" of S&OP and train them all on "how to do it".
✓ Get all of the accountabilities sorted out … who speaks to what, and who is accountable for the S&OP information.

- ✓ Determine "sales/marketing groupings" and "manufacturing groupings" of products.
- ✓ Ensure that all system data is coded to enable correct groupings and access.
- ✓ Design the formats very precise precisely.
- ✓ Ensure that "actuals" are available on demand in a fit-for-use condition.
- ✓ Get the S&OP calendar and agenda in order, and begin the process.
- ✓ Use the information in a working environment to make good business decisions.
- ✓ Provide a decision and action item list after each meeting.
- ✓ Have the guts to do it!

J. E. Boyer Company, Inc. integrates lean manufacturing with enterprise resource planning to create world-class manufacturing environments where these two improvement strategies work together. For the past 20 years, clients from a wide variety of industries have improved their operations in terms of cost management, on-time shipments, inventory investment, people development, operational speed, and overall business performance.

More information is available at: www.jeboyer.com

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