

Sense-and-respond supply chains: enabling breakthrough strategy.



deeper

White Paper

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Executive summary

Successful companies are responsive. They adapt to market changes quickly, remaining nimble in the face of continual economic evolution. Similarly, successful supply chains—once relatively simple product and information pipelines—are becoming more global and complex. As an executive, you face ever-increasing challenges in managing supply and demand as customer needs continually shift.

These challenges span the entire supply or value chain process. In the planning stage, fragmented information hinders synchronization of supply and demand. Ever-shifting global sourcing patterns make it difficult to find low-cost goods. Your company may be forced to build inventory at every stage of the supply chain process, due to poor or nonexistent integration with suppliers and contract manufacturers. And there's a lack of global visibility into products in transit and in the pipeline, which interferes with the ability to meet customer service levels. Finally, there's no ability to effectively up-sell, cross-sell across business units and actually condition market demand.

To address these challenges, some companies are shifting toward sense-and-respond supply chain strategies. Sense-and-respond supply chains can monitor, manage and optimize business exceptions—anomalous events that occur within supply chains—with a limited need for human intervention. They can provide event assessment and optimize supply chain performance between planning and execution, based on realtime information. Ultimately, they allow businesses to remain nimble and responsive to shifting demand. And in a proactive business environment, sense-and-respond supply chains can be used to influence market demand.



Highlights

CEOs recently surveyed by IBM believe their organizations need to respond more effectively and quickly to market fluctuations.

The current environment: what CEOs require

In general, companies struggle with a lack of information integration internally, among partners and among suppliers. Executives like you may face hurdles if you want to remain timely, standardize performance and respond quickly to supply and demand signals, supply chain events and changing conditions. At the same time, you must make quick, well-informed decisions to address urgent issues as your marketplaces evolve. To do so, you need a window into your supply chain—one enabled by decision support tools.

IBM recently conducted an extensive survey to discover the greatest concerns of cross-industry CEOs. Heading the list is top-line growth and profitability, followed by responsiveness. The third most important issue to CEOs is building and retaining an effective workforce—indicating a renewed focus on skills and decision-making support.

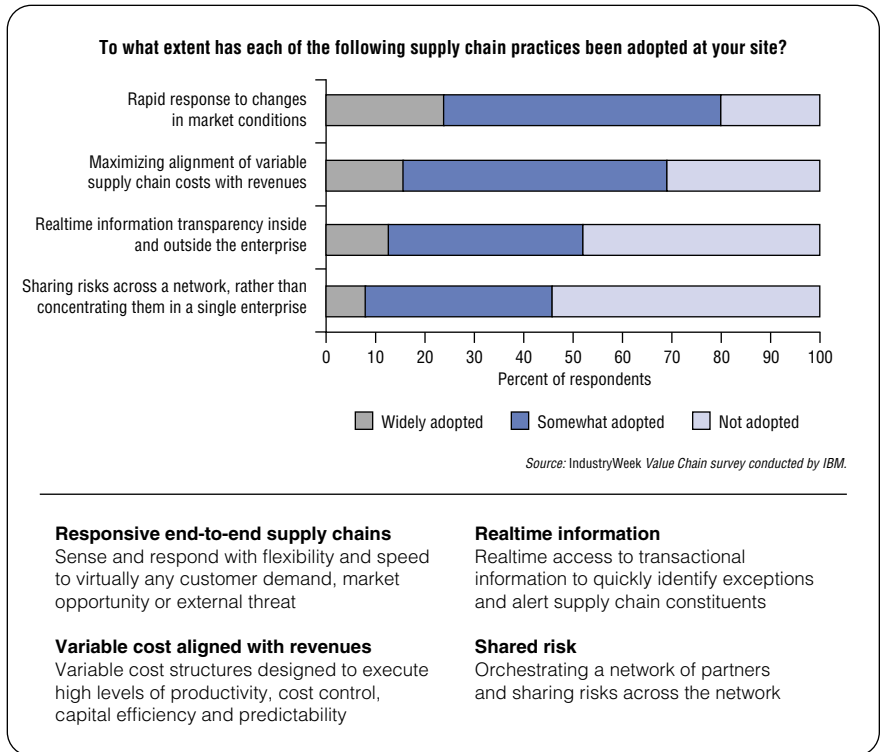
CEOs in the study recognize that their organizations need to sense, analyze and respond much more effectively and quickly to market fluctuations. They're concerned with instituting customer-responsive methodologies. However, few of them believe that their organizations are able to react with sufficient speed and agility to changing conditions and supply chain events. In fact, 80 percent rated their organizations as being "less than capable" of responding adequately. Executives recognize the need to establish effective and proactive realtime responses to evolving market conditions and daily supply and demand shifts. To do so, and to achieve their business objectives, they're focusing on supply chain responsiveness initiatives and adopting advanced practices in four focus areas, as shown in figure 1.



Highlights

Executives are focusing on four key areas of supply chain responsiveness.

Figure 1: Key focus areas for strengthening financial performance over the next three years





Highlights

Sense-and-respond supply chains monitor ongoing activities.

Sense-and-respond supply chains allow you to quickly identify the root causes of issues.

Sense-and-respond supply chains

Sense-and-respond supply chains align strategies and imperatives to ongoing daily activities and decisions. They monitor and observe ongoing supply chain issues in order to enable companies to respond quickly to market shifts and proactively pursue potential market opportunities.

Sense-and-respond supply chains offer realtime visibility into transactional event information, allowing you to quickly identify the root causes of issues. They can sense potential problems and respond with flexibility and speed to infrequent or sudden demands. Sense-and-respond supply chains can dynamically adapt to supply chain shocks through end-to-end visibility and proactive exception management. They can detect company-defined exceptions and alert those affected, which leads to faster resolution. By identifying situations that are designated as out of tolerance, they can determine and execute the appropriate action.

Sense-and-respond supply chains are characterized by optimized performance and metrics, supply chain visibility, collaborative decision processes, exception management, a variable business structure and knowledge retention.



Highlights

Constituents have visibility into supply chain performance measurements.

Optimized performance and metrics

The end-to-end supply chain consistently and continuously measures performance. Dashboards report across the entire chain, and those measurements are shared with all the partners and service providers. Daily report cards and alerts provide information regarding exception events. These measurements are then used to gauge supply chain performance on a regular basis with all constituents. Supply chain partners can also use these measurements to monitor key events or groups of events that may miss business expectations. They can proactively measure on-time delivery performance to customers. Sense-and-respond capabilities can also monitor discrete events, make decisions based on business rules and recommend responses; some of those responses can be automated transactional changes.

Executive and operational dashboards aggregate and synchronize information.

Supply chain visibility

Sense-and-respond supply chains allow constituents to see transactional event and performance information. Both executive and operational dashboards aggregate and synchronize information and support collaboration. Integrated workflows model where critical decision points reside and help determine targets and thresholds for event notification. The information available as a result of end-to-end visibility supports exception management decisions and adaptive planning and execution.



Highlights

Sense-and-respond supply chains support collaborative decision making.

Alerts help proactively resolve potential problems.

Collaborative decision processes

Collaborative decision processes help resolve problems and execute processes when cross-functional supply chain teams—such as suppliers and service providers—are involved. Events are mapped to key decision points within supply chain processes, and user profiles define who receives action items. The escalation process helps ensure that the appropriate parties are notified to take collaborative corrective action. Dynamic, cross-functional teams monitor performance and analyze event exceptions and trends to determine which changes to make to improve planning and execution.

Exception management

Sense-and-respond supply chains drive problem resolution by proactively detecting exceptions and alerting affected parties. Alert messaging warns decision makers when an action should be taken in response to an event or if a trend is emerging. When an exception is detected, the system analyzes the event to determine its implications on other parts of the supply chain, such as inventory or service levels. After assessing the implications, the system uses detailed analytics and optimization logic to determine the most effective way to remedy that exception.

Variable business structure

A variable business structure is an organizational construct that focuses on core competencies and supports an open and integrated operating environment. This supports and promotes collaboration with suppliers, service providers and customers by providing the various supply chain constituents with current



Highlights

data. Performance and event information is shared on a timely basis, so mutual or collaborative decisions can be made quickly. Business processes are low latency—keeping products moving expeditiously through the supply chain—and are dynamically aligned around core process components and capabilities. Management governance is adaptive; it can change as needs evolve. Those accountable for outcomes perform governance on the basis of context.

Knowledge retention

Cross-enterprise knowledge sharing and knowledge bases support decision making and identify performance trends and recurring issues. Collaborative knowledge bases provide the foundation for analyzing performance trends and identifying root causes—and how often problems occur—to assist teams in determining corrective action.

Conditioning market demand with sense-and-respond supply chains

When companies can move away from reacting to market conditions into a more proactive stance, they create a sharp competitive edge. Sense-and-respond supply chains can enable market conditioning through trend analysis and supply and demand information. The Personal Computing Division of IBM uses order trends and actual demand to provide early warnings of constraints and excesses. These early warnings result in the company's ability to position itself to condition demand for existing and planned supply.

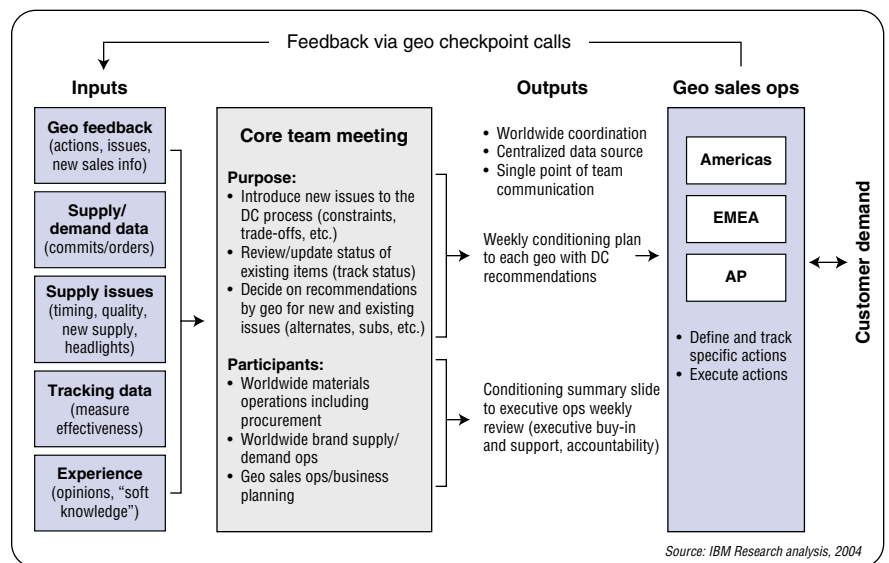
Sense-and-respond supply chains can enable market conditioning.

The system identifies forecasting events and order events. This provides early warning for demand conditioning. It can correlate and analyze the information and detect early insight into supply constraints and excesses. It will then alert the appropriate parties of exceptions and recommend actions.



Based on this information, sales teams adjust selling tactics and supply teams rebalance supplies. The core team is collaborative, composed of members from marketing, operations, procurement, finance and development. They identify supply imbalances, create a conditioning plan in partnership with the geography sales organizations and manage the plan's execution. Figure 2 outlines organizational communications.

Figure 2: Communication flow





Highlights

Retailers can use sense-and-respond supply chain processes to plan for advertising campaign management.

Gaining visibility and managing events for advertised campaigns

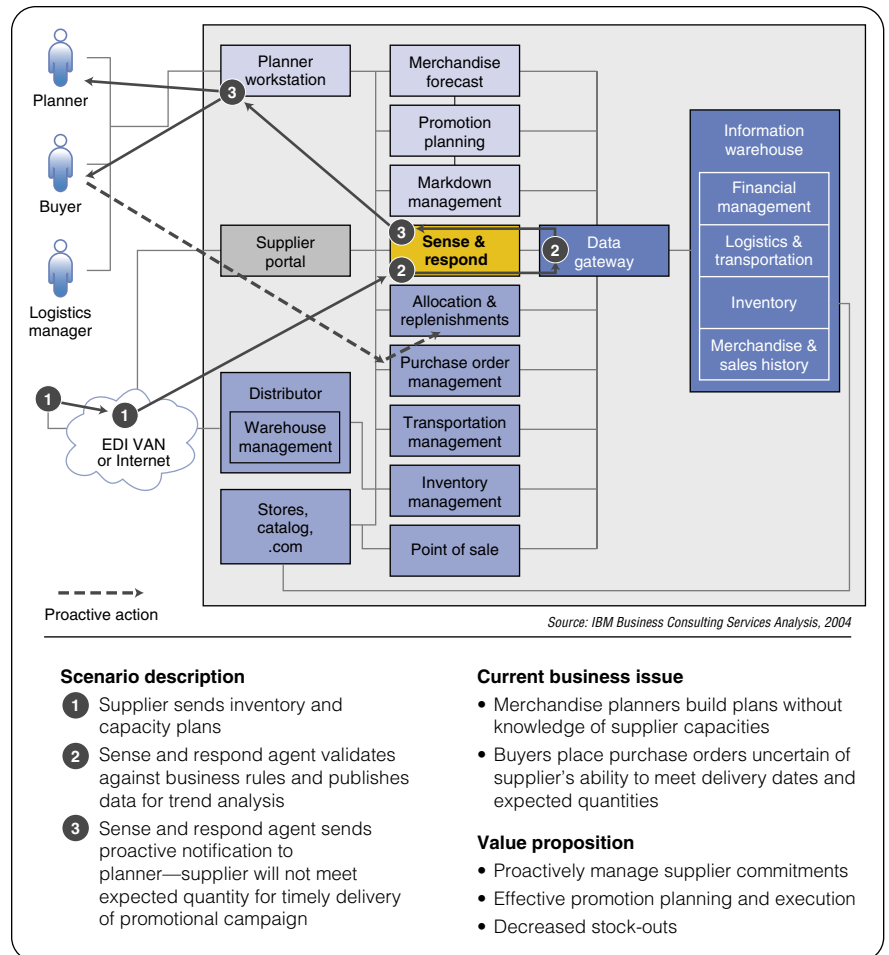
Many retail companies find it challenging to proactively manage advertised campaigns to ensure product availability. They must closely monitor:

- *Rejected purchase orders or those not confirmed by suppliers*
- *Products shipped past the time frame necessary for store allocation or delivery*
- *Products shipped to the wrong store*
- *Advanced shipping notice (ASN) quantities that do not match ordered quantities*
- *When suppliers cannot meet purchased quantity commitments*
- *When suppliers indicate a shipment date beyond the required date.*

Figure 3 outlines how a major retailer leveraged a sense-and-respond supply chain process to provide visibility into supplier capacity plans for campaign management.



Figure 3: Planning sense-and-respond application

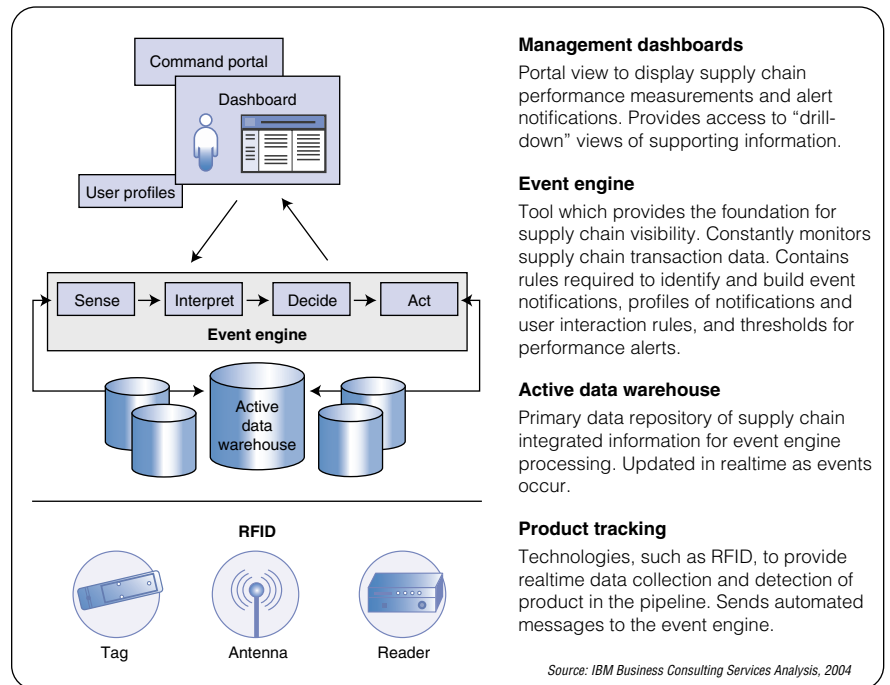


The supplier sends purchase order acknowledgements, inventory status and capacity plans to the retailer. The sense-and-respond system validates the supplier information against business rules and thresholds to determine if the event is critical for the upcoming campaign. If any situation is out of tolerance, the system sends a proactive notification to the merchandise planner. In some



cases, the system generates an automatic transaction and sends it to the appropriate supply chain constituent. For example, a late shipment may initiate a shipping request to another logistics service provider, or a purchase order quantity discrepancy may automatically generate a reorder of merchandise from another supplier.

Figure 4: Supply chain sense-and-respond components





Highlights

Intelligent agents help enable both automated and human decision-making processes.

The sense-and-respond infrastructure

An open and services based technology architecture incorporates realtime information, data integration, business rules and analytics to optimize supply chain performance. Intelligent agents detect signals and send responsive transactions, often without manual intervention. The intelligent agents assist in analyzing event exceptions and, through dashboards, allow employees to view exceptions. In some cases, the agents anticipate an event and notify the appropriate party when the event has not occurred, for example, if delivery notification is not received. They support the ability to make either automated or more-informed decisions based on what the exceptions are.

Analytics detect business trends and support root cause analysis. Optimization components support the planning of actions in reaction to trends and situations. These may include:

- *Notification to key business managers*
- *Changes to operational parameters or business rules*
- *Reallocation of resources*
- *Invocation of exception processes or transactions.*

Optimizing supply chain performance

Sense-and-respond strategies and capabilities can be used to optimize supply chain performance and offer many benefits that can result directly in both quantitative and qualitative value. For example, constituents can see integrated information and processes, allowing for rapid decision making and corrective action before problems escalate. This end-to-end visibility also provides the



Highlights

Sense-and-respond supply chains can provide continuous performance improvement.

The ultimate value of a sense-and-respond supply chain is its ability to make companies more responsive to ever-changing market opportunities and challenges.

opportunity to proactively identify and resolve problems like inventory gaps and possible out-of-stock issues. Bottlenecks and interruptions – such as a supplier’s inability to fill an order prior to a cancellation date – can also be identified and resolved. And because it’s easy to see current stock positions, in-transit stock and on-order status, inventory in the pipeline can be reduced.

When you standardize and align performance measures and targets, you can eliminate silos of performance excellence and meet overarching supply chain objectives. Sense-and-respond supply chains can provide continuous performance improvement through measurement, accountability and event notification of pending problems.

But the ultimate value of the sense-and-respond approach is supply chain responsiveness—the ability to quickly and effectively adapt to impending threats and opportunities, making your company more nimble and more able to meet the demands of an ever-evolving marketplace.

About IBM Business Consulting Services

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For more information

To learn more about IBM Business Consulting Services and how IBM supply chain consultants can help you develop a more responsive supply chain, contact your IBM sales representative or visit:

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