SUPPLY CHAIN STRATEGY REPORT
MAKE THE MOST OF SUPPLY CHAIN STRATEGY
ABOUT THIS REPORT

This APICS report is your guide to understanding, developing and advancing supply chain strategy. It includes groundbreaking research, a case study and practical how-to tips, as well as pertinent articles reprinted from the APICS magazine.

APICS sought to examine the role that supply chain strategy plays in organizations, and in 2011, the APICS research department conducted a survey of more than 9,000 operations management professionals on the topic of supply chain strategy. The survey was designed to reveal challenges and identify ways senior management and operations management can better work together to achieve their goals. The survey results reflect an approximately 5 percent margin of error at a 95 percent confidence level.

This report was developed by APICS Supply Chain Council, an organization that advances supply chain and operations management and innovation through research, education and publications. APICS SCC maintains the Supply Chain Operations Reference (SCOR) model, the supply chain management community’s most widely accepted framework for evaluating and comparing supply chain activities and performance. For more information, visit apicsscc.org.

APICS SCC research reports are based on practitioner surveys that explore trending topics in supply chain and operations management. They include survey results, analysis, tips and best practices to keep you and your organization informed of insights and innovations in supply chain and operations management.
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Strategy:

According to the APICS Dictionary, 14th Edition, “The strategy of an enterprise identifies how a company will function in its environment. The strategy specifies how to satisfy customers, how to grow the business, how to compete in its environment, how to manage the organization and develop capabilities within the business, and how to achieve financial objectives.”
EXECUTIVE SUMMARY
In June and July 2011, the APICS research department conducted a survey of more than 9,000 operations management professionals on the topic of supply chain strategy. The results revealed several significant insights.

Maturity in supply chain strategy remains relatively low:

- Current supply chain strategies are still fairly new. Most respondents report that their current supply chain strategy was adopted within the last two years (33 percent), or within the past three to five years (30 percent)
- Most people do not perceive a difference between supply chain strategy and supply chain management (58 percent)
- Managers often fail to explain major changes to the supply chain in terms of either supply chain strategy or tactics (30 percent responded sometimes, 23 percent said rarely, and 7.4 percent said never)
- Many professionals don’t view the supply chain as a genuine competitive advantage (52 responded “no” or “not sure”)

Operations Managers are Essential for Advancing Maturity
The majority of operations management professionals taking part in the survey are aware of the organizational strategy and mission statement of their organizations (73 percent).

The majority of operations management professionals surveyed have confidence in their skill and experience. On a scale of one to 10, with 10 noting very high confidence, respondents indicated confidence levels between seven and eight (44 percent) and confidence levels between nine and 10 (18 percent). However, 38 percent of survey respondents rated themselves between one and six.

Operations managers know where the supply chain is more aligned, less aligned, or neutral with respect to organizational or business unit strategy. For example, respondents indicated that customer service (71 percent) and product quality (72 percent) are relatively more aligned with strategy. However, the degree of asset utilization (66 percent), IT systems and platforms (64 percent) and cycle time (59 percent) were neutral or relatively less aligned with strategy. As supply chain strategy maturity increases, all aspects of the business need to become increasingly aligned. But achieving such alignment requires diligent effort.
A Baseline for Maturity in Supply Chain Strategy

The majority of respondents (40 percent) indicated they usually refer to organizational or business unit supply chain strategy when making supply chain recommendations or working with supply chain partners (14 percent responded “always,” 27 percent said “sometimes,” and 13 percent replied “rarely”).

Organizations with job roles specifically related to supply chain strategy refer to organizational or business unit supply chain strategy when making supply chain recommendations or working with partners. Organizations with such job roles tend to show a higher degree of supply chain strategy maturity. While larger organizations are more likely to have jobs related to strategy, this trend is not yet overwhelming.

Given the pressing needs of tactical supply chain operation, organizations may require the creation of a job function dedicated to the execution of supply chain strategy, rather than a role devoted to it.

As supply chain strategy continues to evolve, the choices operations management professionals need to make to implement it at the tactical level will become more and more important.

How often do you refer to organizational or business unit supply chain strategy when making supply chain recommendations or working with supply chain partners?

- Yes, we have the same or similar job role or title at my organization
- No, we don’t have any specific supply chain job role or title

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>16.7%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Usually</td>
<td>48.9%</td>
<td>29.8%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>22.2%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.8%</td>
<td>28.1%</td>
</tr>
<tr>
<td>Never</td>
<td>6.7%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>
Excellent Supply Chain Strategy Requires Excellent Tactical Execution

The operations manager needs to work collectively with senior managers to advance maturity in a three-prong approach:

1. Map out your supply chain against a standard model, determine its ideal state according to organizational strategy, and compare the differences. Most survey respondents noted they had not mapped their supply chains against models, such as SCOR (58 percent replied “no” and 17.3 percent said they were not sure).

2. Develop metrics and information flow across the supply chain to equal that of inventory level. Respondents were asked if their organizations regularly measure performance metrics and if so, in what specific areas. The top responses included inventory level (71 percent), materials flow (52 percent) and information flow (24 percent).

3. Increase development of trust relationships with supply chain partners. This enables strategic change, particularly with critical partners (53 percent of respondents indicated their organizations do not spend enough time developing trust relationships with supply chain partners, while 12 percent indicated they were not sure).

Each of these tactics requires a long-term effort. Senior management should sponsor operations managers to ensure continued support and alignment with organizational strategy and initiatives, such as sales and operations planning (S&OP), integrated business planning, sustainability and risk management. Refer to the APICS S&OP folio for additional information.

The Elements of Supply Chain Strategy

Because supply chain strategy influences virtually all aspects of supply chain tactics, management and decision making, it’s a wonder that more organization leaders aren’t emphasizing it.

Consider operations strategy as it is described in the APICS Operations Management Body of Knowledge (OMBOK) framework: “The focus of operations strategy in an organization is to understand and achieve the ability to consistently deliver products and services to meet the customer’s needs and the business’s overall plans.”
The APICS OMBOK Framework provides a detailed description of the specific elements of supply chain strategy. A summary of these elements follows:

**Strategic partnership:** Communications, rules of engagement, expectations, trust and risk sharing.

**Make-buy:** Insourcing or outsourcing optimization, and tradeoffs of cost, speed, quality and trade secrets.

**Drivers of supply chain performance:** Drivers include quality, speed, delivery fidelity, flexibility, pre and post service and cost, as well as facilities, inventory, transportation, information, sourcing and pricing.

**Synchronization:** The end-to-end speed and flow of information, funds and goods and services that support balanced supply and demand across the supply chain.

**Integration:** The integration of suppliers, internal supply chains and customer systems are essential to an effective supply chain. The structure and quality of relationships, networks and alliances among all supply chain partners to ensure communication, trust and collaboration that sustain supply chain as a strategic advantage.

**Scope:** The breadth and depth of all activities (including designing, planning and controlling), capabilities and expectations required of the supply chain.

**Reverse logistics:** Reverse logistical functions that may include remanufacturing, recycling, warranty, recall and similar capabilities.

**Project sustainability:** the ability to produce and distribute products over time that minimizes impact on the environment.

**Regulatory compliance:** governmental regulations and required compliance.

**Global:** Trade open to global sources and customers and the many considerations needed to cover a wider array of possibilities in customer requirement.
Management Hierarchy as Part of Supply Chain Strategy
Supply chain strategy does not exist in isolation but rather throughout an organization in a management responsibility hierarchy, because it serves all levels of operations. It is important that every operations management professional understand how supply chain strategy underscores the organization’s strategy and mission—from the C-suite to the shop floor. To illustrate this idea, imagine supply chain responsibility in three traditional hierarchical layers:

1. Layer one is senior managers: development of overall supply chain design or strategy

2. Layer two is middle managers: supply chain planning

3. Layer three is lower to middle managers and practitioners: supply chain operations.

Each layer is responsible for creating its own plans to execute strategic or planning requirements and to ensure such plans flow properly. Plans must be implemented tactically in the lower levels of operations management, such as production, engineering and distribution and logistics. When combined, supply chain strategy and management directly influence every major business department, including information technology (IT), finance and sales and marketing.

Within a business, all individuals need to ensure that the organization gains the ongoing margin to invest and prepare for future IT and customer needs. Along with an organization’s management hierarchy, there are also layers in the supply chain.

Supply Chain Scope
Supply chain layer one: Supply chain strategy and design typically are long term and altered every few years. The expense and complexity of making strategic changes necessitate careful attention to strategy and design at the organizational or business unit level. Strategy and planning tasks configure the supply chain’s processes and use of resources at each major stage of sourcing, production and distribution. Common strategic design elements include decisions about insourcing, outsourcing and optimal location of facilities, as well as distribution and logistics. Strategy at this level requires adjustment when there are changes to an organization’s strategic mission or when the existing supply chain strategy no longer effectively executes the mission.
Supply chain layer two: Supply chain planning, at the tactical level, occurs regularly but is not a daily task. Most organizations are short term in nature and plan along a timeline of one quarter to one year. The overall purpose is to develop plans that fit the supply chain strategy well achieving maximum benefit from supply chain resources. Planning starts with forecast analysis of demand from different markets or customer segments, and finishes with specific plans outlining how the supply chain will meet that demand during the planning horizon. Planning includes policy setting on inventory levels, matching specific facilities to regions of demand, local sourcing, pricing and promotions, along with targets, goals and measurements to ensure ongoing success. Plans may allow for a series of ranges of demand and supply within the time period as a way to account for uncertainty in, for example, competitive pressures, customer demand or seasonal variation.

Supply chain layer three: Supply chain operations are the constant execution of the supply chain plan. Supply chain operations typically have a daily or weekly timeline depending on the nature of the product, production, marketing and customer need. The scope revolves around satisfying customer orders within the planning requirements. The specific allocation of materials, scheduling of resources, logistical testing tasking, inventory management and related tasks fall into this area.

Create a Competitive Supply Chain

Competitive supply chains combine strategy, implementation and management to harmonize long-term supply and demand by:

- Making trade-offs to address customer needs in levels of supply chain responsiveness, efficiency, flexibility and complexity
- Addressing current weaknesses that inhibit business development
- Supporting a range of supply and demand levels while maintaining profit and margin performance

Supply chain strategy and management increasingly combine to create competitive advantage. In the past, supply chain strategy was too complex a topic to fully grasp. The large number of variables (partners, functions, roles, priorities, orders and materials flow) permitted only limited understanding of a vast domain. However, the arrival of the Internet and advanced IT made it possible to integrate the entire supply chain strategically down to tactical execution. This ability enabled designing, planning and executing supply chain operations based on strategic and tactical direction from all levels of stakeholder management.
With this new ability came the theory that supply chains compete against each other in the marketplace, just like individual organizations do. This competitive advantage is founded on the theory that integrated supply chain strategy, planning and operations can be difficult to imitate. Integration tends to create a broad collection of opportunities, relationships, markets and partnerships that take time to nurture. However, once this collection reaches maturity, it can contribute to the overall organizational strategy or mission of an organization.

Successful alignment of supply chain strategy with organizational or business unit strategy marks the value of an organization’s supply chain strategy. Hierarchy helps define this. Therefore, supply chain planning creates worth from the ability to align with supply chain strategy. Finally, supply chain operations—or execution of supply chain management—must adhere to supply chain planning, thus creating seamless integration and focus at each level. When fully integrated, the entire supply chain serves the overall organization’s strategy and mission.

In actual practice, many organizations have good supply chain strategy, but their leaders cannot successfully implement that strategy. The ability to implement good supply chain strategy becomes a crucially important competitive advantage.

**Strategy Alignment**

Supply chain strategy must align with organizational strategy and mission. This alignment helps organizations decision-makers answer fundamental, strategic questions such as:

- How to satisfy customers
- How to grow the business
- How to compete in a competitive marketplace
- How to manage the organization and develop capabilities within the business
- How to achieve financial objectives
The strategic mission of an organization or business unit also defines the scope of future business. It outlines the range and extent of:

- Customer needs
- Customer groups
- Value creation

Supply chain strategy must deliberately ensure a good ongoing fit exists with organizational strategy and the markets it serves. This means maintaining focus on the organizations unique, ongoing strategic competitive advantages and abilities.

The following table compares the various organizational and supply chain strategies a company might consider. It reveals how strategy helps shape priorities, choices, designs and goals in the supply chain. The table illustrates the scope and the concepts of strategy as it applies to supply chains across different kinds of companies.

<table>
<thead>
<tr>
<th>Type of organization</th>
<th>Organizational strategic competitive advantage</th>
<th>Strategic market elements</th>
<th>Supply chain strategic design elements</th>
<th>Supply chain strategic partnership focus</th>
</tr>
</thead>
</table>
| Energy utility company         | High availability                             | Margin must ensure long-term investment for reliable delivery | ▪ Modern asset utilization  
▪ High service levels  
▪ Overlapping facilities and capabilities | ▪ Rapid response  
▪ Proactive risk  
▪ High information sharing |
| Computer hardware manufacturer | Constant innovation and new products          | ▪ Price and demand unstable  
▪ Unexpected competitive pressures | ▪ High flexibility  
▪ Capable of rapid capacity growth and reduction | ▪ High responsiveness  
▪ High trust  
▪ Risk sharing  
▪ Quick learning |
| Commodity provider             | Lowest price                                  | Price to market essentially determines market share | ▪ Maximum efficiency  
▪ Locations close to customers to minimize distribution cost | ▪ High innovation and constantly reducing waste |
| Luxury goods manufacturer      | High customer service                         | Highly customized designs see highest demand | ▪ Facilitates highest quality value-add service before and after product sale | ▪ Highest skill  
▪ Highest quality provider  
▪ Precision, detail oriented |
**Default Supply Chain Strategy**

Organizations may pursue undesirable supply chain strategy and not realize it. Without deliberate, comprehensive development, supply chain strategy may end up serving a changing array of tactical needs that come from organizational silos, individual manager perspectives or reactive firefighting pressures. If not carefully developed, supply chain strategy may reflect a default position—tolerated by the organization but not positively influencing organizational strategy.

Typical causes of “default” supply chain strategy or the lack of development of an optional supply chain strategy are related to the following elements:

- An inadequate understanding of an organization’s overall strategy or business unit strategy exists among some operations management professionals

- Supply chain strategy is sometimes confused with supply chain management

- There is low supply chain visibility among supply chain stakeholders, such as senior management, demand-related positions (sales and marketing) or finance. For example, recommendations to management about poorly performing suppliers or supply chain partners do not always account for supply chain strategy.

- An outdated, incomplete or simplistic understanding of the supply chain as it actually exists. This can be common among organizations that have seen rapid and sustained changes in demand and supply, market and customer needs, or supply chain partner performance.

Supply chain strategy and management depends not only on organizational strategy and mission from leadership, but also on the foundational realities of the organization’s IT, finance and human resources strategies. Alongside supply chain strategy are product development strategy and sales and marketing strategy.
Supply Chain Co-Destiny
Supply chain strategy must expressly serve the organization that develops it, but its scope might not stop at the organization. Supply chain strategy can employ the concept of co-destiny. The APICS Dictionary, 14th Edition, defines co-destiny as “The evolution of a supply chain from intraorganizational management to interorganizational management.” Over time, well developed and implemented supply chain strategies may fuel deep interorganizational strategies and business planning.

Successful development or redevelopment of a supply chain strategy includes a deep understanding of:

- The organizational or business unit strategy and strategic mission
- The operations of the organization’s strategic process functions and supporting capabilities
- The current, anticipated and desired competitive position in the market
- Existing supply chain functions, and operations strengths and weaknesses

An optimal supply chain strategy means that it:

- Executes operational or business unit strategy
- Leverages strong organizational processes, functions and capabilities
- Delivers sustained, competitive marketplace positioning via the supply chain itself
- Ensures a strategy that remains realistic, practical and probable of success in the face of a range of changing tactical, market, partner and management pressures.

Actual implementation of supply chain strategy typically passes through initial strategy development; supply chain model analysis, refinement and stakeholder acceptance; and supply chain change management implementation.
When developing supply chain strategy, decision makers should consider a number of metrics and measures:

- **Strategic drivers**: Factors that influence business unit and manufacturing strategies.

- **Strategic variables**: The most important variables that affect the business environment and business strategy. Strategic variables include the economic situations, population demographics, and changes in technology and government policies.

- **Strategic benchmarking and performance measurements**: Data showing how others compete across industries.

- **Strategic performance measurements**: The long-term goals of a business, such as profitability, market share, growth and productivity.

Supply chain strategy developers must account for strategic alliances (relationships formed by two or more organizations that share proprietary information), participate in joint investments, and develop linked and common processes to increase the performance of both companies.

Many organizations form strategic alliances to increase the performance of their shared supply chain. Consider the following questions:

- Does your supply chain strategy call for the advantages of forming strategic alliances?

- Which supply chain partners, if any, or suitable candidates?

- What are the desired attributes of a supply chain partner within a valuable strategic alliance?

Also consider strategic sourcing, a comprehensive approach for locating and sourcing key material suppliers. This often includes the business process of analyzing total spend for material spend categories. There is a focus on the development of long-term relationships with trading partners who can help the purchaser meet profitability and customer satisfaction goals. From an IT perspective, strategic sourcing can include automation of request for quotes, request for proposals, electronic auctioning (e-auctions or reverse auctions), and contract management processes.
Supply Chain Strategy Contrasts

In high income, low growth nations, mature distribution systems exist with high volume and rapid movement; high information flow concerning demand; supply; logistics; and relatively few and the customer locations, such as big box stores or online fulfillment centers. In environments like these, business integration and good relationships help to ensure responsiveness. To make more money without selling more, professionals have to maintain or increase price levels. Better service and more innovative products enable companies to charge a premium price. To that end, companies must be able to move quickly, work with the best suppliers developing the right products, and get the products to market faster than the competition.

By contrast, in low income, high-growth nations, there are characteristically long fragmented distribution systems, smaller order quantities, and slower speed to the customer. Delivery is a small business with numerous delivery points. Therefore, a low-cost supply chain will capitalize on more labor-intensive processes and reduced complexity, rather than capital-intensive automation. Processes must minimize use of scarce infrastructure, local currency, or difficult to obtain raw materials. Forecasting, demand planning and sales and operations planning must work with patchy supply and demand information.

Supply Chain Strategy Case Study: Fast-Fill Valve Company

The hypothetical Fast-Fill Valve Company is a midsize manufacturer of commercial and industrial water valves. While not a rapidly growing industry, the company has expanded over the years by purchasing several smaller competitors. Fast-Fill primarily serves a domestic customer base. Exports have been a modest but growing component of sales and demand. The company’s business strategy and corporate mission statement call for the company to grow and gain market share by offering high-quality valves and by seeking to satisfy every customer by producing high-quality custom valves with market-leading speed and price.

After surviving a recent economic downturn, the Fast-Fill board of directors seeks to improve the long-term viability of the organization. The board made changes to the organizational strategy with the following actions:

- Created a broader, more diversified global customer base by better serving growing international demand.

- Enabled the organization to endure and benefit from long-term market volatility in the water valve industry.
You have been asked to participate in a supply chain strategy and planning review task force led by Fast-Fill vice president of supply chain. The task force must compare current strategy to the changes and operational strategy to identify the gaps. New supply chain tactical planning must address those gaps.

The Fast-Fill supply chain relies on a slow and inexpensive supply chain of offshore suppliers focused on commodity items such as brass and iron alloys as well as the valve component subassemblies used in most products. Fast-Fill also relies on a fast but expensive supply chain of domestic suppliers of precision valve components ordered and scheduled in a just-in-time process designed to reduce inventory.

The production department assembles these components to manufacture make-to-order and make-to-stock valves. Demand mainly comes from new construction and maintenance-repair-overhaul (MRO) service providers. Fast-Fill operates one large distribution center serving several commercial plumbing distributors and some large, direct sale customers.

**Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis**

Fast-Fill Valve Company order winners usually demonstrate good customer service, excellent product quality, and the ability for speedy custom production over larger valve manufacturers. However, while Fast-Fill is generally competitive in the overall market, it is rarely the lowest price producer of commodity valves. That market is dominated by large manufacturers of valves. Orders that include commodity valves represent 50 percent of Fast-Fill’s orders. Fast-Fill is threatened by the increasing quality and custom valve production ability by two overseas producers that gradually are gaining market share in Fast-Fill’s domestic market. Fast-Fill is neither large enough to buy one or more of these growing competitors, nor is it small enough to remain unthreatened by them.

In response, the Fast-Fill board of directors is considering a new strategy of directly partnering with an international valve manufacturer in order to boost its international sales. Selection and development of a contractual, profit sharing relationship with a potential overseas competitor that complements Fast-Fill’s organizational strategy and mission and delivers exceptional international production, sales, distribution opportunity is ideal.

A task force is examining the potential impact at the supply chain level. Specifically, what would a new chain strategy and related tactics look like under this new organizational strategy?
Supply Chain Tactical Planning

A new supply chain strategy is essential. The current supply chain and its strategy anticipate serving primarily a domestic market. Serving more international customers and projects is expensive and not competitive, given the current supply chain configuration when compared to Fast-Fill’s competitors.

In terms of agility and flexibility, the Fast-Fill supply chain is not well configured to endure international marketplace volatility. It doesn’t share and integrate enough supply, demand and inventory information with its supply chain partners. Fast-Fill’s current IT system is designed to rapidly capture and produce each customer’s technical product requirements without an emphasis on the third-party sharing of data. There is limited inventory control of commodity subcomponents, and relationships with suppliers and distributors are weak. Volatility or rapid changes in price or demand would place unsustainable burdens on the entire supply chain. In order to maintain rapid production and customer delivery domestically, Fast-Fill frequently carries excess commodity subcomponent inventory due to its slow overseas suppliers.

The task force develops the following proposed strategic and tactical plan to begin design and implementation over the next several quarters:

- Select and develop a profit-sharing partnership with a potential overseas competitor to outsource the supply commodity valves in domestic and overseas markets, in return for distribution of Fast-Fill custom valves through that potential competitor’s distribution channels. Reduce domestic production and inventory of the least competitive make-to-stock commodity valves in favor of partner production and supply.

- Improve the use of information in all aspects of supply chain business operation, with focus on customer demand, levels of inventory and rates of supply. The goal is to enable more rapid response to changes in demand and marketplace pricing while retaining profit and product margin with optimal production and inventory globally.

Tactical Plans: Tasks, Metrics and Measurements

The task force recognizes that working with an international partner requires improved supply chain partner relationship and information sharing. Some existing suppliers may not suit the new strategy, while others will become more important.
Hold at least one high-level and two middle management-level face-to-face meetings with key suppliers and distributors in order to:

- Discover advantages and disadvantages they see in Fast-Fill when compared to competitors
- Create a foundation of permanently improved relationships
- Improve access and use of demand, supply and inventory levels
- Capture ongoing competitive insights and trend perspectives, and incorporate those in Fast-Fill’s supply and demand management practices with its supply chain partners
- Perform a SWOT analysis of Fast-Fill against its global competitors with the goal of identifying potential partner or merger opportunities

Begin to develop, test and implement IT systems across suppliers and distributors to provide timely demand, inventory and supply information suited to an internal market. This will support optimal ordering, scheduling, inventory and production processes.

- Strategically evaluate current suppliers and distributors to capture their capabilities and perspectives on supporting a new partner, international sales, information sharing and related areas.
- Create the budget, personal, measurements, goals, schedules and incentive plans necessary to carry out supply chain-related strategic and tactical plans. Present them to appropriate management for approval, support and execution.
- Create and maintain an implementation team that carries out these tactical plans and projects across all stakeholders and departments including finance, legal, sales and marketing and senior management.
- Periodically report progress and recommend next steps needed to complete all supply chain strategic and tactical plans.

These tactical plans now flow to all levels of supply chain management for daily and weekly execution over the next three quarters.
PERSPECTIVES FROM APICS MAGAZINE

APICS magazine is an award-winning publication featuring innovative ideas and real-world strategies for inventory, materials, production and supply chain management; planning and scheduling; purchasing; logistics; warehousing; transportation and logistics; and more. Visit apics.org/magazine to view current and archived issues and to learn more about the magazine.
The Chain of Alignment
Get your supply chain players moving in the same direction

By John van Veen, CSCP
Today’s global marketplace is more fiercely competitive and volatile than ever before. Globalization, compressed product cycles, recessions, rapid technological changes, ever more demanding customers, and continuous innovation and improvement force companies to be flexible, get lean and use the strengths of their supply chains. Companies no longer battle other companies. More and more, it’s supply chains competing against other supply chains in the race to market supremacy.

The possibilities of supply chain management are enormous, and practice shows the path to supply chain excellence is equally formidable. Current literature focuses on five types of barriers to effective supply chain integration: technological, relationship, structural, human resource and alignment. The following focuses on alignment, as an aligned supply chain offers significant opportunity to gain greater competitive advantage.

Inconsistent goals challenge successful internal and external supply chain integration. Divergent objectives lead managers to make self-interested, suboptimal decisions that frequently are in opposition to those of other business managers and supply chain members. For example, procurement departments often formulate cost-reduction goals, whereas business goals are set toward innovation or risk reduction.

Only when the various members of a supply chain and internal stakeholders are pulling in the same direction can competitive products and services be developed for both short- and long-term success. Mismatched goals must be avoided. All internal managers and all members of the supply chain must view the other members as fully committed to the chain of alignment. In cases where there are different value structures, collaboration becomes difficult as each department and chain struggles with unique strategic directions.

Therefore, alignment—or how well business goals and strategies are in parallel with division strategy and the demand and supply chain—is essential to realizing competitive advantage for the supply chain as a whole. In addition, alignment may be the most critical element to supply chain excellence. Also note that, although sales and operations planning is an important alignment mechanism, there are more themes to consider.

It is remarkable how often business owners do not act according to their often-public strategies and objectives. Even vice presidents of logistics are not always fully aware of corporate objectives and themes. As a result, the company and the entire supply chain run after their own, sometimes misaligned, objectives. The risk is obvious. Companies must stop rewarding suboptimization as certain stakeholders achieve success with no connection to the “alignment chain.”
The Chain of Alignment

Supply chains must operate as an extended enterprise. (See Figure 1 for an example of this.) It is crucial to align all segments of the value chain with regard to objectives, themes and the like. At the heart of boardroom, supply chain and business alignment is the premise that true parallel operations require knowing about and understanding each other’s priorities. Therefore, any effort to foster alignment entails getting to know stakeholders’ agendas—and, more importantly, being part of those plans. Figure 2 illustrates a chain of alignment representing the overall aligned supply chain agenda.
Topics and Themes
How should supply chain professionals go about identifying the relevant topics and themes with which they should align? The following are carefully selected, industry-independent topics that can be used to determine the level of alignment between the various functions in the value chain. They include:

- Cost reduction
- Agility enhancement
- Innovation
- Service orientation
- Risk reduction
- Core competences
- Corporate social responsibility
- Expansion
- Internationalization
These nine topics and themes were revealed through extensive analysis of annual reports from various companies in the Netherlands. They are broken down further into 60 areas of focus. For example, if cost reduction is the main value driver in the supply chain, business goals can be directed at on-time delivery, lean supply chain management, reduction of cash-to-cash cycle time and the like.

The purple line reflects the board of directors’ focus on the nine topics. The blue line depicts the focus on the relevant themes of the major business within the company. The green line illustrates the current position of procurement professionals regarding those topics. Finally, the orange line reflects the suppliers’ vision of the nine topics.

The scores, rated 0 to 5, are determined by means of assessment and reflect ratings in terms of “not applicable” to “applicable.” The distance between the lines reflects the degree of misalignment. This particular example shows that procurement, business, and suppliers are not in parallel with the principal strategic topics of risk reduction and service orientation.

Figure 3: Alignment topics and themes

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Figure 3: Alignment topics and themes

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Getting There
The benefits of effective supply chain management can be huge and can help a company achieve much higher levels of customer satisfaction at a lower total cost. However, these advantages are far from automatic. They derive from heightened collaboration, which is inherently difficult to achieve and maintain.

Obtaining cross-functional buy-in and a balanced supply chain management approach that takes disparate functional views into account is essential. The previously stated method facilitates these goals. To establish common vision and objectives (and perception of differences) among the various chains must be measured and mapped out clearly. This can be achieved with research and by means of discussions with representatives of the various chains. The degree of (mis)alignment among all the stakeholders then can be identified and visualized in clear presentations. The insights obtained are the starting point for a structured dialogue among the board, the business, procurement (internally), and the main suppliers (externally).

Executing supply chain alignment often is an eye-opener for everybody involved. It will deliver and inspire. Supply chain alignment initiatives can be viewed as supply chain management enablers because they will help the various chains avoid inconsistent operating goals and stimulate a shared vision, common strategic objectives, and consistent policies and procedures.

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FUELING SUPPLY CHAIN TRANSFORMATION
Predictive analytics energizes dynamic networks
By Can A. Dogan, Frode Huse Gjendem and Jade Rodysill
As companies fight for competitive edge, it is those businesses that bring products to market faster, more cost-effectively and with greater customer intelligence that will survive and thrive. Superior supply chain performance is essential—particularly in a rapidly globalizing marketplace, where the ability to adapt to and predict fast-changing conditions is essential. To secure the required capabilities, operations and supply chain management professionals need to leverage insights from the vast amounts of data available across their organizations and employ analytical techniques.

Supply chain predictive analytics—using an integrated framework that employs quantitative methods to derive insights from data—could be the key differentiator in rapidly building and sustaining a high-performing supply chain in the decade ahead. Accenture research highlights the scale of the challenges to be overcome. The 2008 report “High Performance Through Supply Chain Planning” revealed that most companies are struggling with at least some aspects of forecasting and supply. For instance, the median forecast accuracy at the stockkeeping unit (SKU) level was just 75 percent.

Additionally, we found that companies have little visibility into what will affect them at either end of the supply chain—from the flow of customer orders to the operating condition of their key suppliers. This is in large part due to insufficient levels of collaboration with suppliers and customers. Lacking the requisite linkage of systems, common processes and readily available commercial software tools, many companies are ill equipped to carry out effective advanced planning and scheduling, analytics, optimization, sales planning and cross-functional collaboration.

We know the leaders in this field are using prescriptive (forward-looking) analytics to understand what’s coming next. They have moved from descriptive analytics—understanding “what?” and “why?” and even “so what?”—to insights into what is the best that can happen.

For those businesses that commit to broad and deep transformations, the end results can be significant.
Using predictive analytics, professionals can look upstream and downstream to evaluate operational impacts of their decisions—spanning plans and schedules, carrier and asset use, quantity and quality variation, cycle times and landed costing. Armed with such insights, experts believe these decision makers are as adept at shaping demand as they are at sensing it. Compared to their competitors, they are more than four times as likely to achieve minimum accuracy levels of 80 percent in demand forecasting and more than twice as likely to rate their ability to shape demand as “good” or “excellent.”

The advantages extend to managing supply, as well. Compared to laggard companies, successful organizations are more than four times more likely to quickly respond to disruptions, partly because they involve suppliers in planning. Furthermore, these masters are twice as likely to have explicit links between new product introductions and planning processes, which is ever more important as cycles compress and introductions increase. They also have up to 50 percent less finished goods inventory than laggards. Predictive analytics can play a vital role in fueling the supply chain transformations that enable organizations to compete at this level. There is no shortage of opportunity.

However, a 2010 Accenture survey of 600 senior managers at more than 500 blue-chip businesses shows that, for most companies, analytics capabilities are a long-term goal rather than a reality. Currently, just 6 percent of businesses are making significant use of analytics in their supply chains. And, half the respondents believed their organizational structures prevented data and analytical talent from generating enterprise-wide insights.
Advanced Performance

Supply chain transformation focuses on building and sustaining the world-class capabilities needed to improve and sustain performance, which drives cost competitiveness, balance sheet flexibility, operational excellence, profitable growth, resilience and sustainability. Supply chain transformations embrace operations, as multiple initiatives are used to address each of the key domains: planning, sourcing and procurement, fulfillment, manufacturing, product life cycle management, and service management. An assessment tool can be used to prioritize these initiatives by identifying capability gaps, quick wins and major benefits.

Successful supply chain transformations address all primary levels in the shareholder value tree. (See Figure 1.) When properly executed, these initiatives should deliver 1-to-5 percent revenue enhancement and 5-to-25 percent improvements in other areas. For those businesses that commit to broad and deep transformations, the end results can be significant—strategically, on the bottom line, in areas of risk exposure and across the environmental footprint. The proviso is that, having invested in such large-scale transformation projects, decision makers should continuously seek ways to improve primary levels and sustain whatever benefits have been achieved.

Figure 1. Shareholder value tree, impacts and improvements

[Diagram showing the shareholder value tree with categories and percentage improvements]

<table>
<thead>
<tr>
<th>Supply chain impacts</th>
<th>Percentage improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue leakage reduction</td>
<td>1-5 percent</td>
</tr>
<tr>
<td>Reduced stockouts</td>
<td></td>
</tr>
<tr>
<td>Improved service level performance</td>
<td></td>
</tr>
<tr>
<td>Reduced direct labor cost</td>
<td>5-25 percent</td>
</tr>
<tr>
<td>Reduction in direction material spend</td>
<td></td>
</tr>
<tr>
<td>Reduction in distribution spend (transportation and warehousing)</td>
<td></td>
</tr>
<tr>
<td>Increased inventory turns (improved cash flow)</td>
<td>5-25 percent</td>
</tr>
<tr>
<td>Maximum asset utilization</td>
<td></td>
</tr>
<tr>
<td>Reduced lead times</td>
<td></td>
</tr>
<tr>
<td>Shorter build-to-order times</td>
<td></td>
</tr>
<tr>
<td>Fewer physical assets</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Five Success Factors
We have identified five key success factors for supply chain transformation, all of which should constitute the foundation of any program.

1. **Develop a value creation agenda.** Define the supply chain’s role in delivering overall business strategy, as well as its value by individual product and product segment. It is important to understand the vulnerability of alternative supply chain models to changing market conditions and the total cost of ownership (TCO), as well as what it takes to deliver value—in other words, where is money left on the table due to dysfunctional supply chain models?

2. **Configure supply chain processes around value delivery.** Supply chains should be configured to deliver TCO benefits and target customer value by segment (customer, product and geography), with supply chain strategy rigorously focused on optimizing TCO across network configuration, operational parameters and processes. Professionals must understand the root causes of whatever inefficiencies are identified across functional boundaries before moving swiftly to reduce costs in core and noncore supply chain management processes. Resources and investment need to be focused on integral processes that drive the overall value proposition, with metrics and ownership defined by process type.

3. **Use information technology (IT) to optimize supply chain processes.** IT capabilities must link to planned business impacts. This means establishing the expected value of technology implementation, connecting solution capabilities to business effects, defining requirements by segment, and determining commonality. It’s also important to identify where supply chain analytics will bring the most value. For this process to succeed, close collaboration between IT and supply chain professionals is essential.

4. **Establish the organization and people agenda.** Leaders must understand and buy in to the overall supply chain vision, while being aware of how its objectives will affect behaviors, competencies and attitudes. Key decision makers should be identified and empowered. Skill gaps must be addressed and rewards introduced to motivate change and ongoing performance by segment. As cross-functional teams play a vital role in driving end-to-end business process outcomes, identify and plan for any training needs.

5. **Manage the change and implementation journey.** Company decision makers must set clear milestones for the transformation, with enough flexibility to ensure the end state can be continuously reevaluated. They also should identify early what actions will be needed to drive decision-making, competency, behaviors and rewards. Although it is essential to closely align implementation
approach and organizational culture, proven change management methods can be employed as needed to foster, absorb and sustain transformation.

Analytics enables the deeper analysis companies need to prepare themselves for a range of market conditions.

**Why Analytics Now?**

Burgeoning complexity, shortening product life cycles and business cycles, amplified price and volume volatility and increasing regulatory threats throughout the extended supply chain mean that managers need acute, real-time insights into what will affect them on the demand and supply sides. The time is right for high-performing companies to investigate the value that predictive analytics can bring to supply chain transformation.

To secure the acute insights they need, organization leaders must move decisively to harness and leverage the data at their disposal. The good news is that technology no longer lags aspirations in this area. Sophisticated tools now are integral to the latest enterprise resources planning, decision support, financial and customer relationship management software. Cloud computing has transformed the ways in which vast quantities of data can be collected, stored and processed. And open-source software has democratized the analytics capabilities needed to drive meaning and insight from data.

Analytics, by definition, provides advanced techniques that go far beyond regular methods employed in supply chain transformations. Such extra sophistication will provide better results when properly deployed. But the benefits are much broader. By providing new approaches and methodologies, analytics enables the deeper analysis companies need to prepare themselves for a range of market conditions, allowing them to hedge against current market risks and future volatility.

Take inventory target setting, for example. A traditional service level model for an individual SKU might provide a viable inventory target for the product, while ignoring significant interrelationships (and impacts) across the supply chain network. Powered by advanced analytics, a multi-echelon inventory optimization solution would drive further benefits and improved inventory levels by scrutinizing network-wide matrices of demand and lead times.

Further benefits are possible. For instance, where supply lead times follow random patterns, an analytics-based solution could simulate supply chain network behaviors to provide valuable information on inventory levels. By probing deeper, additional insights could be obtained, providing the foundation for a broader and far more realistic inventory management strategy.
Analytics in Action

None of this is theoretical. Real-world companies are enjoying significant benefits with analytics every day. For example, consider a global office products company that aimed to improve its inventory performance. A supply chain mastery assessment revealed an opportunity to improve analytics both within the supply chain and enterprise-wide. Using root cause analysis, it was determined that inventory processes were sound, but upstream collaboration processes with merchandising and sales were inadequate. This meant that inputs often were late or inadequate.

The company created analytics infused demand planning and sales and operations planning capabilities that improved collaboration with business units and enhanced the quality of the numbers within the process. Its integrated planning organization now is supported by an analytics capability, which increases specialization and overall accuracy. Statistical tools and models drive results.

Decision makers at an international oil and natural gas service company wanted to support international growth objectives. Using manufacturing analytics, this business was able to realign its supply chain with growth markets, thus reducing cost and lead times and improving scalability. Based on the insights obtained, the company also was able to shift supply to more cost-effective manufacturing and sourcing locations, embedding greater accountability for cost, delivery and supply chain performance; improving planning and inventory management capability; and reducing its footprint. Project annual savings were between $100 to 140 million.

Leaders at a major agribusiness company sought to identify, challenge and evaluate supply chain improvement initiatives. There were four priorities:

- Identify key SKUs through sales volume analysis.
- Identify optimum levels of master data parameters for safety stock determination.
- Analyze the business impacts of poorly maintained parameters.
- Analyze current forecasting methods and forecast accuracy key performance indicators.

Supply chain planning analytics were used to identify the root causes of performance problems, and the methodologies were applied to forecasting, inventory and cost-to-serve analysis. As a result, the company now is
equipped to design a supply chain model that aligns directly with specific business needs.

These real-world examples underline the power of superior supply chain analytics. Of course, not every business needs to build a high-performing analytics supply chain. Indeed, because it calls for extensively accurate data, special skills, and substantial technology and training investments over time, many organizations opt to buy analytics outcomes instead of developing these capabilities themselves. The analytics services are not entirely outsourced. Instead, the functional- and technology-intensive tasks are given to third parties that deliver them across a larger client base.

Regardless of which model a company selects, all supply chain transformation programs can benefit from analytics-powered insights. The fundamentals remain unchanged. That is to say, successful transformations will continue to call for a rigorous focus on value, process, innovation and behavioral change. With this foundation in place, the following basic steps should be taken to move the organization toward an analytical mindset:

- Initiate proof of value in targeted supply chain domains.
- Cultivate a culture of analytical rigor. Educate the workforce on supply chain analytics capabilities.
- Source external skills as needed, and do not allow internal skills restrictions to become a barrier to advanced analytics.
- Recognize that it can be a challenge to sustain analytics beyond a specific project. Explore the option of buying it as a service.

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SHARING A COMMON OUTLOOK
A window into supply chain improvement

By Gary A. Smith, CPIM, CSCP
Excuses. Everyone has heard them, and everyone has used them. Whether real or imagined, excuses are barriers to accomplishing goals and objectives.

Since 2004, the New York City Housing Authority (NYCHA) has been eliminating excuses and barriers through a positive, collaborative and creative process that has changed the rules of the game and achieved results beyond expectations. We have removed barriers within departments, between departments, and among NYCHA’s vendors and customers. We call this process “no-excuses supply chain management.”

NYCHA is the oldest and largest public housing authority in the United States. It owns and manages 178,000 apartments in 338 developments for New Yorkers with low or moderate incomes. Approximately one out of every 20 New Yorkers lives in an NYCHA development. My department, supply chain operations, is responsible for the sourcing, purchasing, warehousing and delivery of materials used for the ongoing maintenance of developments and offices. In 2010, the department purchased more than $55 million in materials—from electric, elevator, heating, appliance and plumbing parts to janitorial products, tools, computer equipment, tractors and trucks.

As with any organization, NYCHA faces many challenges. One major issue throughout the past decade has been the chronic underfunding of public housing in the United States. And in addition to the funding decline, NYCHA also faces rising costs. Unfunded mandates—programs the organization is required to operate but which lack specifically allocated cash—and higher energy and nondiscretionary costs surpass rent increases, putting tremendous pressure on NYCHA to spend less and find new avenues for revenue.

The job of supply chain operations is to address these challenges by making the supply chain more efficient and removing barriers that impede improvement and success. Such advancements can have far-reaching impact. While our direct customers are the housing developments requesting the material we provide, our customers’ customers are the 400,000 plus residents of NYCHA developments. Thus, the department has the opportunity to make a real difference in the quality of life for hundreds of thousands of New Yorkers.
A Vision for Improvement
NYCHA’s supply chain consists of the supply chain operations department, our vendors and our customers—primarily 338 housing developments. Information, orders, materials and funds move from vendors to supply chain operations to customers; alternatively, movement is from vendors directly to customers, with supply chain operations providing management. In many ways, our supply chain resembles one in the private sector. And, just as in the private sector, our department must manage internal operations, vendors and customers as efficiently and effectively as possible.

In 2007, supply chain operations created a three-year operating plan for improving NYCHA’s supply chain, which we called “vision 2010.” We identified four operating principles, which were:

- Ensuring all processes were quality- and customer-focused
- Having a bias toward action
- Maintaining a keen dedication to accuracy
- Prioritizing cost containment and cost reduction

With vision 2010, supply chain operations set in motion nearly 20 different initiatives for lowering operating costs and improving inventory accuracy. We then discovered the need for a mechanism for change, as the initiatives required eradicating excuses and changing processes, procedures and paradigms within our department, NYCHA and our partners. This mechanism for change evolved into no-excuses supply chain management. No-excuses supply chain management can be summarized in six steps:

1. Create a supply chain vision and plan.
2. Identify the excuses preventing performance improvement.
3. Enlist stakeholder support.
4. Determine, with stakeholder input, possible solutions, and agree on a course of action.
5. Implement the solution that best meets the needs of the business.
6. Review, revise and improve as necessary.
No-excuses supply chain management differs from other project management methodologies in its focus on identifying and removing the excuses that impede performance improvement. Project management has roots in information technology. Its method is to identify the current state (the “as is”) and the future state (the “to-be”), recognize the gaps between them, and develop processes to eliminate the gaps. It is, by nature, problem-focused.

But supply chains are not computer programs. They are distinct entities made of materials; information; funds; fixed assets, such as buildings; mobile assets, such as vehicles; and—most importantly—people. What project management fails to address is this human factor. Behind every excuse to performance improvement are human beings who created the processes. The truth is that emotional attachments can form among people and the processes they helped create: When we ignore the human factor, we do so at our own peril.

No-excuses supply chain management finds problems using as-is and to-be methods, but then shifts focus to identifying excuses and barriers with the help of all stakeholders (some of whom even may have created the excuses). But instead of marginalizing people and creating an us-versus-them environment, no-excuses supply chain management makes everyone a stakeholder and thus part of the solution. When a team is comprised of all groups that need to be involved in a decision, the issue of blame is eliminated. The team members can focus on improvement that benefits the entire organization.

When supply chain operations began to leverage no-excuses supply chain management, the initial focus was on internal department improvements. The first step was to get our own house in order and eliminate some of our excuses before stepping outside. As our processes improved, we engaged other departments to help remove excuses. Finally, our vendors and customers became stakeholders in performance improvement. Because we had developed a reputation for excellence within NYCHA, we were able to work well with other groups and bring people together.

Another approach to improvement adopted by supply chain operations took the form of “crawl, walk, run.” We intentionally limited our scope on large projects so we could adjust programs more easily during implementation. In doing so, we changed the rules of the game, and our results improved many times over. Through working with no-excuses supply chain management, we discovered five “game changers” that propelled us to greater success.
Game Changer 1: Mastering Inventory Accuracy
Inventory accuracy is the keystone of supply chain management. Unfortunately, our lack of inventory control impeded customer service and forced us to maintain high inventory levels. Also, we relied on annual physical inventory counts as our primary means of adjusting inventory balances.

Our internal audit team worked with warehouse staff to implement cycle counting in the first quarter of 2004. Supply chain operations set up the program and developed its procedures. We identified A, B and C items and established counting rules. We also set up weekly and monthly reports, which still are in use.

Results were immediate, and we celebrated these early successes by publishing metrics for all to see. By the end of the year, our inventory accuracy was so high that we were able to eliminate the annual physical inventory count. The final test of our inventory accuracy came at the annual audit conducted by an outside firm, which resulted in zero discrepancies. This was unheard of within our organization—but we had accomplished it within a single year.

Since 2004, our department’s mastery of inventory accuracy has yielded a 5.4 sigma level of inventory accuracy (measured as dollars of adjustments stemming from counting errors divided by average inventory), a 47 percent reduction in inventory investment, a 96 percent fill rate, and a perfect record of zero variances in outside audits for seven consecutive years. Supply chain operations continues to improve the program by implementing spot checks and updating procedures, maintaining our dedication to accuracy and making it part of our organizational culture.

Game Changer 2: Improving Vendor Relations
Vendor relationships can make or break a supply chain, and, in order for NYCHA to provide the best service to its residents, it has to rely on its supplier community to provide quality products and consistent service. In 2007, supply chain operations developed a strategic sourcing vision. Our strategy became “trust—but verify.” We do everything possible within our procurement rules to be the best customer to our vendors by eliminating excuses.

For example, in conjunction with NYCHA’s accounts payable department, in 2005 we began paying vendors using electronic funds transfer methods.
Meanwhile, we implemented early payment discounts: We were allowed to take a cash discount if the vendor was paid within 10 days. The discount program was voluntary at first, but, in 2008, it became part of our purchasing terms and conditions for blanket orders—an example of “crawl, walk, run” in action. We now apply a “2/10 net 30” discount to nearly all material purchases—meaning, bills paid within 10 days enjoy a 2 percent discount. Since 2007, use of early payment discounts has grown more than 900 percent, and NYCHA saved more than $1 million in 2009 and 2010.

In addition to early payment discounts, supply chain operations issues a quarterly vendor scorecard. Our vendors are ranked on a 10-point scale, with a score of 8 or higher indicating acceptable performance levels. Currently, nearly 85 percent of our vendors are above this threshold. Rarely does a vendor rate as unacceptable for longer than one quarter because they cannot win new business with NYCHA in this state. Also, vendor contracts are subject to cancellation if scores are unacceptable for two or more consecutive quarters.

My department meets with accounts payable on a monthly basis to review ongoing problems and address vendor complaints. We also have implemented software such as Oracle’s Advanced Procurement and iSupplier Portal, which enables vendors to register with us, place bids, and track payments electronically.

Game Changer 3: Sustainability
In 2008, supply chain operations laid out a plan for sustainable procurement. Its goals were to acquire more environmentally friendly products, obtain them in a sustainable manner, and encourage vendors to use sustainable practices. We wish to stay ahead of the curve with respect to new laws and mandates while providing cost-effective products.

Our vendors are learning that there is “gold in green” and that adopting sustainability does not mean reducing profitability. Within the last year, my department more than tripled the number of environmentally friendly items in its catalog. In addition, since switching to compact fluorescent light bulbs in 2007, supply chain operations saves $1.5 million annually in energy costs. Switching to smoke detectors with 10-year life spans has saved nearly $1.8 million annually.
Game Changer 4: Customized Programs
NYCHA has been around for more than 75 years, and its age means its inventory of housing stock requires constant upkeep. Also, emergencies do occur, and we must be ready to face them. To supply material quickly in emergency situations, supply chain operations worked closely with the elevator and plumbing divisions, determining the items and quantities typically needed in an emergency and adding those requirements to our department’s inventories. We also reorganized the elevator and plumbing areas of our warehouse and made materials easily identifiable. This way, our emergency services department’s staff people can find and obtain material and, using forms we provide, record what was taken so inventory is reconciled the next day. As a result of these efforts, NYCHA saves many hours in waiting for parts, allowing emergency repair work to be done more efficiently.

Game Changer 5: Supply Chain Operations Replenishment System
While our latest game changer still is a work in progress, it has the potential to create huge savings and make our supply chain more efficient. NYCHA’s property management department operates 338 housing developments, and most contain at least one material storeroom. The employees who operate these storerooms report to the management of the housing development, and they have little or no training in warehouse operations. Additionally, storeroom inventory is not owned by supply chain operations—it is not in our inventory system or subject to our cycle counting regimen. Audits showed these storerooms had inventory levels much higher than required.

Working closely with the property management department, we piloted an inventory program in 22 housing developments. For the top 50 to 100 items, we placed inventory owned and managed by supply chain operations in the storerooms. As needed, orders for this material are picked at the development and replenished from our warehouse based on min/max levels in the software. Cycle counting also was implemented. We achieved a 26 percent reduction in the amount of material purchased by the developments for the items in the program. We conducted focus interviews with staff members in a variety of roles, and they nearly unanimously recommended that supply chain operations take control of storerooms and manage materials.

The journey of supply chain operations is to provide the best and most efficient material supply chain possible for NYCHA. Through the systematic application of no-excuses supply chain management, we will continue to design and implement initiatives that keep NYCHA on the path to supply chain excellence.
Competitive advantage and steady improvement arrive through the efforts of professionals who use tools and execute supply chain concepts. These people share a common outlook, are team-oriented and innovate. They are the foundation of no-excuses supply chain management, believing that what they do makes a difference. When given the right tools and training, they remove barriers and build relationships with an almost limitless capacity for creativity and innovation. NYCHA’s supply chain operations staff has been—and will continue to be—pivotal to our success.

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SEEING THE FUTURE OF SUPPLY CHAINS
Today’s topics and tomorrow’s expectations
By Richard E. Crandall, PhD, CFPIM, CIRM and CCP
The Journey Ahead
This “relevant research” explores some of today’s most pressing supply chain challenges and prospects for the future. They represent the kinds of problems that supply chain managers are trained and eager to deal with. Here is a sequence of steps that can help lead you to a solution:

- Contentment. First, take a weekend off and prepare yourself mentally and physically for what you must do next.

- Complexity. It’s true that what lies ahead is daunting. But good supply chain managers know they need a problem to solve to be content.

- Concern. When looking at all that’s going on in the supply chain, it’s appropriate to be concerned. Just make sure it’s a concern that stirs you to action, not one that discourages you because of inaction.

- Change. Change is good, especially if it’s your idea. Come up with some ways you can work through the maze and lead others to a better future state.

- Challenge. It would not be nearly as much fun if it were not a challenge. Accept that you have the right stuff to get it done.

- Confidence. Solving the problem and moving ahead through challenging times will give you the confidence that goes with a job well done.

- Continue. You have arrived. Take another weekend off and be content until you start the cycle all over again. This is why you got into business, isn’t it?

Today’s Topics and Tomorrow’s Expectations
What is the future of supply chains? Are they a well-established and major component of today’s business environment? Everyone likely will agree that supply chain management has become one of the hottest topics in business literature, particularly because rapid change has been the norm. But what does the future hold?

Anyone claiming to know the future may be considered crazy or naive, but I will endeavor to do so nonetheless. The good news is that I am going to quote some other professionals before I venture my own predictions. After all, that is the purpose of this department— to research what others have done.
Before examining the future, it’s prudent to look at today’s business environment, as predictions often are based on trends. Certain areas are somewhat predictable—what competitors are doing or are going to do, the trend of the economy, and the flow of new technologies. Note the caveat “somewhat predictable.” Even less predictable, or somewhat unpredictable, are society’s opinions and political leanings, government actions at all levels, and environmental effects such as earthquakes and tsunamis. All of these areas affect, or are affected by, supply chains.

In addition, developments in supply chains are influenced by what customers need and want, including reduced costs higher and verifiable quality, reduced lead times, reduced process variability, increased flexibility and agility, reduced risk to consumers, responsiveness to consumer needs and wants, assimilation of new technologies.

**Predictions Abound**

Tompkins Associates (2011) lists the top 11 priorities for service supply chains and emphasizes the returns phase. Priorities also include executive sponsorship, organizational alignment, processes to handle contingencies, awareness of regulatory trends, strategic outsourcing, and a commitment to sustainability.

Both *IndustryWeek* and *Material Handling Management* outline a number of predictions introduced by IDC Manufacturing Insights including how to simplify complex supply chains, develop business intelligence and analytics, recognize supply-side responsiveness in demand forecasting, increase information technology (IT) visibility, shorten lead times with proximity sourcing, contain costs through IT outsourcing, add modernization tools, increase collaborative processes, put a stake in the cloud, and incorporate mobile applications and smart devices while balancing IT management concerns with employee enthusiasm.

In *Logistics Today*, Ellis adds dynamic optimization of supply chains, sales and operations planning as a synchronizing process, convergence of supply chain and product life cycle management, investment in global operations, tightened transportation capacity, increased risk from offshoring, sensors and machine to machine, and increased use of metrics.

In addition, I did a survey at the APICS Foothills Chapter to get an indication of the supply chain issues that were of the most concern. Table 1 shows the results. The topics are ranked by the average response, with the percentage of responses shown for each of the levels of concern. Responses are grouped into the focus descriptions shown in the far right column. The highest percentage in each row is highlighted. I will use these responses, along with other inputs as shown in the references, to identify what appear to be some of the major issues.
confronting supply chain managers. It is worth noting that several issues have responses in all levels of concern, from no concern to great concern.

The major concerns are associated with short-term availability, cost and assuring the continued flow of goods and services. Following are more in-depth assessments.

**Outsourcing.** Outsourcing has two major areas of concern. The first is the availability and reliability of deliveries. ("Will I get what I need?") This is aggravated for some companies because of the recent tragedy in Japan. The second concern has to do with the total cost of ownership of goods received. Company leaders are discovering the added costs of transportation, inventory carrying expenses, and quality variance are more than expected. Additional hidden fees can include loss of manufacturing capability at home, uncertain competition from suppliers, and consumer unease. Consequently, some companies are finding nearshoring a more comfortable alternative; others are trying to figure out how to avoid outsourcing altogether.

**Prediction:** Offshoring will continue to increase—but at a more deliberate pace—and may be leveling off, at least until uncertainty settles down. However, outsourcing requires more careful analysis than in the past.

**Demand management.** Supply chain professionals spend a lot of time trying to forecast demand. As supply chains extend around the world and become more complex, the old method of statistically extending past history to forecast future demand is no longer adequate. The future will not be like the past. Even sophisticated data collection methods such as point-of-sale terminals and rapid data transmission still are only capturing past history, albeit almost in real time. Forecasters must have visibility into what customers are going to do, such as sales promotions, the introduction of new products, the phase-out of old products, entrance into new markets and other similar events. Even with this added knowledge, forecasters have to expect the unexpected.

**Prediction:** Collaborative forecasts, jointly developed with your customer, will become commonplace.

**Risk management.** Of all the supply chain concerns, risk management is the one most written about. Even before the disasters in Japan, supply chain managers were becoming more concerned about what to do if the “big one” happened. Along with handling day-to-day disruptions, now professionals worry about truly major disruptions. Should managers develop a contingency plan? Or can they just hope to ride it out? It pays to be prepared. Choosing the best strategy may mean the difference between success and failure.
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<tr>
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<td>Transportation availability and costs</td>
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<td>6%</td>
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<td>53%</td>
<td></td>
<td>4.7</td>
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</tr>
<tr>
<td>3</td>
<td>Supply chain complexity</td>
<td>6%</td>
<td>28%</td>
<td>33%</td>
<td>33%</td>
<td></td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Demand forecasting/management</td>
<td>6%</td>
<td>17%</td>
<td>17%</td>
<td>39%</td>
<td>28%</td>
<td>4.5</td>
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</tr>
<tr>
<td>5</td>
<td>Offshoring</td>
<td>6%</td>
<td>11%</td>
<td>28%</td>
<td>22%</td>
<td>33%</td>
<td>4.4</td>
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</tr>
<tr>
<td>6</td>
<td>Risk management</td>
<td>11%</td>
<td>28%</td>
<td>44%</td>
<td>17%</td>
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<td>4.4</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Information technology compatability</td>
<td>11%</td>
<td>39%</td>
<td>39%</td>
<td>11%</td>
<td></td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Trust among supply chain partners</td>
<td>6%</td>
<td>11%</td>
<td>39%</td>
<td>17%</td>
<td>28%</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Product traceability</td>
<td>6%</td>
<td>11%</td>
<td>28%</td>
<td>44%</td>
<td>11%</td>
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<td></td>
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<tr>
<td>10</td>
<td>Political unrest</td>
<td>28%</td>
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<td>44%</td>
<td>11%</td>
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<td></td>
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<tr>
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<td>Information sharing</td>
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<tr>
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<td>22%</td>
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<tr>
<td>13</td>
<td>Product innovation and development</td>
<td>6%</td>
<td>18%</td>
<td>29%</td>
<td>35%</td>
<td>12%</td>
<td>3.7</td>
<td></td>
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<tr>
<td>14</td>
<td>Sustainability/reverse logistics</td>
<td>6%</td>
<td>33%</td>
<td>39%</td>
<td></td>
<td></td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Financing and funds flow</td>
<td>11%</td>
<td>33%</td>
<td>17%</td>
<td>17%</td>
<td>22%</td>
<td>3.7</td>
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<td>33%</td>
<td>22%</td>
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<td>6%</td>
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<td>17</td>
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<td>56%</td>
<td>22%</td>
<td>11%</td>
<td>11%</td>
<td></td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Culture conversion</td>
<td>17%</td>
<td>39%</td>
<td>17%</td>
<td>17%</td>
<td>11%</td>
<td>4.2</td>
<td></td>
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<td>Human resource availability</td>
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<td>33%</td>
<td>17%</td>
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<td>20</td>
<td>Dispute resolution</td>
<td>22%</td>
<td>39%</td>
<td>22%</td>
<td>11%</td>
<td>6%</td>
<td>4.1</td>
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</tr>
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</table>
Prediction: Risk management will become a core competency. It is no longer just a matter of buying a policy from your local agent.

**IT compatibility, security and privacy.** IT holds both hope and apprehension for supply chain managers. It can be a way to extend enterprise resources planning systems into supply chain planning systems, enabling participants to quickly and reliably share information that will provide benefits to all. On the other hand, IT carries the burdens of systems compatibility, information security, privacy of confidential information and resource availability. How do companies separate the vital few from the many trivial applications? Will cloud computing save the world from drowning in its own data?

Prediction: IT will become an even greater need in supply chain integration; however, it will require strategic management more than ever before.

**Trust.** Do you trust your customers? Do you trust your suppliers? These questions haunt supply chain managers. Building trust requires metrics to gauge progress in building relationships. Trust is progressive and requires working your way through "coordinate, cooperate and collaborate" cycles.

Prediction: Trust along the supply chain will become a prized achievement for a select few.

**Process technology.** Technology has come a long way. The development of computers, robots, videoconferencing, smart grids, mobile devices and electronic readers are just a few of the advances made in recent years. More technological advancement is coming, thereby increasing the problem of how best to integrate supply chains.

Prediction: Technology can lead; however, if companies and supply chains don't continually adapt their infrastructures and cultures, added turmoil will follow.

**Knowledge corridor.** We know a lot about transforming data into information, and we are learning more about how to transform information into knowledge, both tacit and explicit. The hope is that this will enable us to make better decisions that will benefit not only our businesses, but also our social and environmental goals. To do that, we must add one more step to the knowledge corridor—wisdom. Who in your company has the wisdom to look toward the future? We may not yet know how to teach, train and cultivate wisdom, but it’s certainly time to start thinking about it.

Prediction: Companies are building a knowledge supply chain; they must also begin the journey to build wisdom.
Sustainability. The Brundtland Commission provided the most quoted definition of sustainable development by calling it “development that meets the need of the present world without compromising the ability of future generations to meet their own needs” (1987). APICS magazine covered this subject in November/December 2010. Classifications such as the triple bottom line, cradle to grave and cradle to cradle are ideas generating momentum. Some believe the business community must lead if this endeavor is to succeed.

Prediction: Sustainability will become an imperative. Supply chain participants should prepare to be a vital part of the movement toward environmental and social responsibility.

Services. Would you buy an automobile if there were no service and repair available? Or a computer if there were no help lines? Today, companies must assure customers that there are services that make products useful throughout their long and productive shelf lives. These include insurance, facilities design, auditing and taxes, human resource management and education. Businesses get social services from governments or other institutions such as education and health care providers.

Prediction: Goods without services are dead ends. Thus, services will become pervasive in supply chain design and management. Linking services to a single company will be challenging; linking services along the supply chain will be a monumental task.

Supply chain complexity. It is easy to say complexity should be simplified, but it is difficult to do. The business community is in the early stages of confronting the enigma that fields of science have been dealing with for several decades—complexity and chaos theory. These concepts deal with nonlinear behavior of weather, insect populations and business cycles. Writers discuss a complex adaptive system, the fitness landscape, strange attractors, and the edge of chaos to describe the world that lies ahead.

Prediction: Complexity in supply chains will increase as globalization increases. Business professionals must learn to manage complexity by making effective decisions.

Ethics. Corporate social responsibility is the third part of the triple bottom line, after financial and environmental responsibility. Most people agree that ethical behavior is desirable, both in our private lives and in business dealings. However, we continue to see unethical, even criminal, actions in business. How can we prevent or control this? Can we legislate or regulate it? Finding a solution poses a challenge worthy of the best minds and hearts.
Prediction: Ethics will be the next battleground—after we solve the world’s financial and environmental problems. Should my crystal ball prove accurate, remember: You heard it here first.

References


5. APICS Foothills Chapter. Survey of membership regarding concerns in their supply chains. Survey Monkey, April 7–14, 2011.


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