

Cover Story:

A SnapShot From the Future

What if we could have a perfect vision of what is coming in supply chain management? In this article, the authors take the liberty of jumping to the future so they can “review” and reminisce about the coming 15 years without the restrictions of today’s thought, technologies, organizations, and human bias.

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The objective of this article is to forecast the major issues affecting supply chains in the year 2016. The authors will use the ultimate in technology, a time machine that will transport them ahead 15 years. The following paragraphs, after a few seconds delay, will contain a reminiscence of the next 15 years, written in June, 2016.

Overview

It has been quite a ride! The new millennium began with an e-craze. As a result, the Nasdaq soared to over 3,000 points and the Dow broke 10,000. During the sell-off, we witnessed the Nasdaq and Dow retreat 67% and 33.7% respectively.

It is safe to say that after 15 years, we have fully recovered: first from the e-craze, then from unreasonable pessimism. We have now returned to “sophisticated fundamentals”.

We started the century with Y2K, 3PL, 4PL, B2C, B2B, B2B2C and e-marketplaces, to say nothing of the e hyphen phrases which proliferated all business. Currently, there is not one corporation in North America that uses “e-” or “.com” in its name, although 99.76 percent of all corporations actually use electronic communication and computing and the WorldNet as a core part of their business.

Remember the Old Days?

Do you remember when the Dow-Jones was at 21,000? Remember pennies and one-dollar bills? Seven-digit telephone numbers?

Do you remember the paper communications:

- *TV Guide*, a print magazine that reported times and descriptions of TV programs, before immediate availability

scheduling became the norm?

- Airline tickets, paper documents that were necessary to board an airplane (rather than using immediate thumb print verification)?
- Personal checks, formal pieces of paper that were handwritten list details to facilitate money transfers?

Remember typists and bookkeepers (Full-time positions with a primary responsibility to enter data)? How about trading floors, designed to bring people face-to-face to trade commodities, rather than exchanging them electronically with far more participants?

And do you remember demographics, a process that summarized detailed data on groups of consumers, and used those data to project the likely actions of other, hopefully similar, consumers? With individual transaction recognition, immediate data transfer, and immediate manufacturing response, the concept of guessing likely demand seems very old-fashioned.

And do you remember planograms, the patterns which were inflexibly used to determine what retail products fit where, in what volumes, and on which shelves? Contrast that with dynamic spatial reallocation, and immediate response based on store take-away volumes and time cycle management.

Do you remember checkout counters, where customers were forced to queue up while each item was manually scanned? Stores were able to reduce head count by one-third and decrease customer waiting time by an average of 20 minutes by instituting automatic pick/summarize processing and customer order debiting. Couple that with synchronized business and consumer pick up, and the human retail cycle

time was reduced by more than 72 percent since 2001.

Do you remember having to buy whatever the retailer had? In 2001, 80% of cars sold were not the first choice of the buyer. Or consider golf clubs, or quality clothing; it is hard to believe that customers had to buy standard-sized products, yet pay premium prices.

Since then, the whole concept of “producing” has changed. It’s hard to believe that leading companies such as Ford, IBM, and Hewlett-Packard actually manufactured products in 2001. Often, it was the manufacturing assets which caused large companies to lock into an unresponsive, push selling. Immediate resource reallocation seemed an impossibility in those days.

The Old Technologies

Do you remember the “Internet”, a patched together set of computers, owned by universities, corporations, government agencies, and other organizations which loosely linked virtually every source and user of data? After the Internet crashes of 2008 and 2010, we finally were able to implement a full WorldNet, probably just in time to avoid global information calamity.

How about Internet passwords—words and symbols which had to be remembered in different contexts? They are a far cry from today’s thumb print and iris security. Linked to these passwords where the joys of waiting for files to transfer, carrying laptops which weighed as much as five pounds, and linking everything with copper wires. In those days everyone accepted the paradigm of purchased (not shared) software, slow computers, and manual, rather than radio frequency or voice recognition, data entry.

Consider five-year plans, which gave way to one-year plans when new technology cycles prohibited long-term formal planning. And itemized phone bills, which became uneconomical when the cost of detailing an individual call became higher than the call itself. How about photographic IDs, which gave way to alternative, cheaper and harder to duplicate technologies?

Finally, there was redundant packaging. In 2001, small products often were bubble wrapped and packaged in cardboard boxes, which in turn were shrink-wrapped, then packed with dividers in corrugated boxes. The boxes were loaded on pallets, which were often shrink-wrapped. As the Green Movement moved from Europe to the United States, more than 85 percent of all packaging disappeared.

The Old Logistics Paradigm

In the past, the objective of the supply chain function was to deliver the right product, to the right place, at the right time and in the right quantity. Although this objective still remains the ultimate driver, the 'rights' are far more specific, segmented, and current, and the techniques used to achieve them have changed.

Previously, most supply chains experienced a proliferation of inventory which was supported by a complex distribution network. It was common practice to manufacture a product, then move it to a company warehouse, and then transport it to a distributor's warehouse before finally reaching the end consumer. Unfortunately, few supply chains were able to consistently meet or even fully understand customer requirements.

Although logistics and supply chain management represented the first integrating activity in most corporations, some of the old standards and activities of 2001 seem downright laughable now.

For example:

- Supply chain and customer response were separate functions, which seems most incongruous at this time. Perhaps they were separated because of tradition and culture; perhaps because of technology and focus. Regardless, by splicing the customer relationship away from the ability to respond, virtually every company shortchanged its customers, raised its costs, and multiplied the complexity of its management activities.
- Service was described in terms of broad percentage levels. For example, "We have a 99.6% service level" was a typical, crude description of service. There was no differentiation by customer, little measurement against specific customer requirements, and virtually no measurement of the economic value of alternative service offerings to different customers.
- In-transit inventory was considered untouchable. With no immediate location transponder system, moving inventories were as good as dead.
- Warehouse locations were fixed, often owned or under long-term lease. The concept of dynamic facility reallocation seemed impossible. That may be why the concept of owned supply chain services was acceptable.
- Optimization relied on static modeling, causing warehouse configurations to be based on five-year forecasts which generally had a minimum of a 50 percent error rate. Multi-daily reoptimization was only a concept then.
- There was no premium scheduled regional rail service anywhere in North America. Until over the road commercial transportation clogged virtually every

major artery, the call to improve rail service wasn't heard.

The supply chain of 2001 had a purely operations focus, with virtually no sensitivity to customers, but much attention to cost minimization and control. What brought the situation to a head? Possibly complaints about service, lack of respect from customer contact people, or the sheer leverage that became available through new technology. In any case, the supply chain's sensitivity to customers, improvements in resource flexibility, and integration with the full services of the corporation began the trend leading to a new dynamic and integrated focus. The accompanying table highlights this transition.

The Strength of Today's Supply Chain

Five forces have shaped the supply chain of 2015: Access, agility, globalization, linkage and re-intermediation. Each was in play and widely discussed in 2001. Unfortunately, the leaders of many companies missed the significance of these forces. Rather, they continued with "gradual change" and strategies were following rather than leading. The demise or acquisition of 40% of the *Fortune* 100 largest companies of 2001 bears out that fact.

Access

Never before has the supply chain been able to stay close to products, customers and activities on an individual transaction basis — even at the retail level. Recently developed, inexpensive technologies now provide exact knowledge of every item's location and condition, and record the exact instant any item is purchased at retail or moved in the manufacturing environment. As a result, "dynamic" has become the word of the day. It applies to facilities allocation, customer profitability, customer management, service

optimization, and profitability management.

Coupled with new manufacturing flexibility, the supply chain is able to respond with the right bundle of services to provide the right level of customer service and the right profit contribution — with every transaction. Resource management, a concept simplistically applied to the airline industry, is now the backbone of business, and the critical linkage between the former warring factions of Customer Relationship Management and Supply Chain Management.

Agility

As the term “dynamic” grew in importance, agility simultaneously became the most important characteristic of supplier partnerships. The once restricted capacity, time, and response characteristics of corporations have given way to flexible relationships, dynamic outsourcing, alternative sourcing, variable locations, delayed manufacturing, and a host of other new participants and characteristics in the supply/response network.

Globalization

Many manufacturers, distributors and retailers in 2001 viewed their positioning as being within a limited geography. Most of those companies no longer exist. Even the smallest supplier or customer is sourced from, or sells to, multiple countries. China, Eastern Europe and Mexico have become the fastest expanding markets; they have also come to provide more than 20% of North American imports. The corner store has become an international business.

Global economic currency has been very helpful in the new economy, but highly flexible scheduling systems, well-managed priority transportation, and a whole new attitude have been instrumental in

driving the effectiveness of the global supply chain. As recently as 2003, internationally sourced fashion or fad products (especially clothing and toys) could be sourced only once during a season. Today’s weekly re-sourcing, with size and design adjustments based on actual demand, would appear impossible back then.

Linkage

Until customer relationship management and supply chain management could be integrated on a transaction basis, today’s current effectiveness would never have been feasible. The ability to manage individual transactions within a knowledge framework of customer profitability was one of the great breakthroughs of the early 2000s.

Meanwhile, the supply chain process changed the level and depth of interaction with business partners. Collaboration with suppliers grew to joint product development, sharing of detailed information on forecast and customers, and jointly operating shared systems.

Re-intermediation

The single change which has most affected the supply chain must be re-intermediation. Back in 2000 and 2001, disintermediation was the popular term. Forecasters and pundits described the demise of intermediaries, be they distributors, consolidators, or wholesalers. Exchanges were going to destroy all commercial market intermediaries, and the Internet would bring an end to store and catalog retailers.

The forecasters missed three important issues:

- Human interface continues to be far more important when exceptions must be handled. With the customer service disasters of 2000-05, a growing emphasis on educated, linked human intervention grew in both the retail and

commercial channels

- Company-to-company linkages are never perfect. Different terminology, changing priorities, restructurings, and competitive change preclude rigid, structured, inflexible relationships. Yet historically, profitability was driven by consistency. Seemingly identical, shared values often resulted in incompatible results, ones which drove costs up and service down.
- Though core competencies are important, certain competencies were not considered to be core by any service provider or customer. As a result, in many areas the standards for service were mediocre, especially in linked packages of supply chain service.

Today however, focus is on producing products for customers using a myriad of what once were called “just in time” concepts. These concepts include:

- Dynamically redesigning, rebalancing, and rescheduling production based on actual immediate demand
- Producing to stock for immediate delivery
- Producing to order with a rapid turnaround time
- Assembling to order locally

These models have had significant results: inventory turns have increased, cycle times have reduced and product quality has improved. Yet the supply chain has returned to the basics.

During the last 15 years, re-intermediation has become the norm. Newly configured service providers have recaptured the critical intermediary role. Fortified with the finest in immediate data, sophisticated software access, and effective linkages to primary and alternative asset and service supporters, today’s re-intermediation leaders include aspects of :

- Lead logistics providers (coordination, consolidation, management of others)
- Quick response/postponement specialists (supporting reduced field inventories and improved customer service levels)
- Geographic demand balancers (coordinating availability of materials whose demand is unpredictable and regional)
- Customizers of products and packaging
- Exchanges
- Electronic commerce matrix (linking public and private exchanges, demand and suppliers, and different technologies)
- Customer relations representative (often totally transparent to the customer)
- Just in time scheduler (assuring a availability of materials to match production schedules or retail rollouts)

At any time of day, 24 hours a day, seven days a week and 365 days a year, today's intermediary has constant electronic radio frequency linkages with suppliers, transportation carriers, customers, consumers, and various third parties. These intermediaries may go by many names, including retailer, 3PL, e-channel, exchange, quick response service, vendor manager, lead logistics provider, or wholesaler-distributor.

The Leaders

There is no question that the environment has changed radically. Today, leaders are fully integrated between marketing and supply. Resources are routinely shared with competitors and other service providers. Intermediaries that resisted globalization are out of business. As a matter of fact two-thirds of the wholesaler-distributor firms of 2001 no longer exist.

The terms "global" and "international" are dead, not because they don't represent reality, but rather because they are totally assumed. Fashion and seasonal merchandise are routinely reordered and changed throughout the season. As a result, service levels are far higher and inventories are drastically down. The integration of supply chain with customer responsiveness has lowered finished goods inventory 50 percent to 70 percent across all industries. Automotive inventories are down 90 percent, as the industry has shifted to make to order.

Best practices in 2015 include transparency of information, and sharing of intimate operating information among suppliers and customers. Today's leaders are full-service orchestrators of resources, in essence working as capacity managers, just like airlines. They offer the services of international

ers, customers, and suppliers, and they accept full responsibility for customer satisfaction anywhere and at any time.

Back to 2001

Flipping the switch back to 2001, how reasonable is the scenario just described? It isn't hypothetical. The technological changes, integration, globalization, and consolidation — all are in process and almost certain to happen. Of course, things may not develop exactly as described, but much of the result will depend on the initiative, creativity and willingness to change of today's participants. For the organizations that are uncomfortable with change, there will be a role, but it will be subordinate and unprofitable. For the organizations willing to lead the change, there will be many bumps along the way, but an amazing future, one worthy of the risk.

The Changing Supply Chain Focus		
	2001	2015
Focus	Adding value through movement, time, order	Dynamic management of flows of items, information, funds, ideas
Objectives	Cost, productivity, reliability	Process performance, cycle time, agility
Activity focus	Operations, corporate staff	Throughout and beyond the organization
Ownership	Mostly us	Almost all them
Methods	Industrial engineering	Organization, process, culture
Incentive focus	Cost, fixed service targets	Dynamic, customer service targets, total flow cost

banking, and are total value partners, focusing on customer product profitability. They often provide custom and adjustable service packages, using dynamic customer profitability calculations to allow their suppliers to say "no" to unprofitable transactions. These leaders are fully integrated, electronically, with applications systems provid-

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