Leveraging the Full Value of E-commerce

1999 Annual Conference

Matt Anderson, Vice President
Craig DeLano, Principal
Agenda

• The growing importance of e-commerce
• E-commerce leverage points in supply chain management
• Defining the right approach for your company
The Growing Importance of E-commerce
E-commerce as a whole is expected to grow rapidly

Note: EDI revenue not included in forecasts.
B-B e-commerce is larger and growing faster than B-C e-commerce

**Business-to-Consumer Revenue Projections ($ US)**

- 1998: $8
- 1999: $20
- 2000: $40
- 2001: $70
- 2002: $108

CAGR 92%

**Business-to-Business Revenue Projections ($ US)**

- 1998: $25
- 1999: $109
- 2000: $251
- 2001: $499
- 2002: $843

CAGR 141%

B-B e-commerce is currently concentrated in technology-related industries, but its eventual influence is predicted to be widespread.

Source: Forrester Research.
Note(1): Computing and Electronics currently represents 40-50% of e-commerce value in US.
Early adopters cut across all sectors of the economy

% of US GDP

- Manufacturing
- Health Care
- Communications
- Transportation
- Media
- Financial Services
- Automotive
- Retail & Consumer
- Computing & Electronics
- Manufacturing

- DELL
- Cisco Systems
- VerticalNet
- chemdex.com
- MetalSite
- iShip.com
- eToys
- eBay
- drugstore.com
- ImproveNet
- iNextCard
- Career Central
- Yahoo!
- autobytel.com
- E-LOAN
- E-TRADE
- Roadrunner
- ICQ Inc.
- Covad
- Healtheon
- WebMD
- Micromedex
- Lowestfare.com
- biztravel.com
- iNextCard
- The First True Internet Visa
Most companies are in the infancy of Internet adoption. Step function value creation occurs when companies go beyond basic e-commerce transactions.

- Brochureware+: Countless
- On-line Catalog/Transactions+: Many
- Digital Customer/Supplier Relationships: MILPRO
- Digital Business Design: Dell, Cisco
- 2X, 5X, 10X Business Process Improvements: Cemex, The Gap

Key Insights:
- Number of players adopting e-commerce
- Investment required ($, talent)
- Magnitude of value creation potential
The internet is increasingly driving changes in the supply chain through greater interaction with the end customer.

Traditional Roles:
- Manufacturer
  - Brand management
  - Product management
  - Channel management
- Distributor
  - Inventory financing
  - Break bulk logistics
  - Reseller management
- Reseller
  - Physical locations
  - Merchandising
  - Selling
  - Customer service
- Customer

New Roles:
- Manufacturer
  - Sales initiation
  - Customer relationships
- Distributor
  - Assemble-to-order
  - Drop-ship
- Reseller
  - Sell virtual inventory
  - Set up virtual stores

E-commerce is not the goal

“Let’s be clear on one thing: If you take a business that is a bad business and put it online, it’s still a bad business – it’s just become an online bad business.”

– Michael Dell
E-commerce Leverage Points in Supply Chain Management
E-commerce can enhance supply chain management at many levels.

- Enhance Functional Capabilities
- Support New Digital Channel
- Integrate Extended Supply Chain
- Enable Value Net

Potential Opportunity

Customer and Supplier Impact
On-line transactions are usually considerably less costly

Traditional Vs. On-line Transaction Costs

- Telephone and related customer service: $5.00/$1.07
- Telephone: $0.54/$0.01
- Teller: $0.27/$0.01
- ATM: $1.00
- Airline Ticket Processing: $101,500
- Auto Sales of 100 Cars: $20,000
- Mortgage Origination (% of loan amount): 1.2%/$0.6%

E-commerce can also reduce administrative burden

Cumulative Percentage of Total Purchase Orders

Purchase Order Size ($)

Buyer Timelog Analysis

Cumulative Percentage

<table>
<thead>
<tr>
<th>Category</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>6%</td>
</tr>
<tr>
<td>Management</td>
<td>6%</td>
</tr>
<tr>
<td>Req. Spec.</td>
<td>3%</td>
</tr>
<tr>
<td>Customer Inquiries</td>
<td>10%</td>
</tr>
<tr>
<td>Contacting Vendors</td>
<td>20%</td>
</tr>
<tr>
<td>Processing POs</td>
<td>37%</td>
</tr>
<tr>
<td>Exp. PO</td>
<td>2%</td>
</tr>
<tr>
<td>Administration</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
</tr>
</tbody>
</table>

Time Percentage per Category

Mercer Management Consulting
Tech Data, a major PC distributor, transformed (and streamlined) its selling processes through the implementation of a range of electronic, customer-direct ordering interfaces

Historical Challenges:

- Call centers provided primary customer service and order management capabilities
  - Administrative focus rather than customer service
- Fragmented process characterized as “hurry up and wait”

Tech Data E-Commerce Solution

- **TD on CD**: A CD-ROM catalog that provides product and service information
- **TD On-line**: A client-server-based system that offers product searches, pricing, availability, order entry and inquiry options to preferred customers
- **TD Web**: Tech Data’s Web site that offers password-protected access to their electronic catalog, a directory of manufacturers web sites, and order-tracking with direct links to UPS and FedEx
Early results associated with Tech Data’s expanded e-commerce offerings have been positive

<table>
<thead>
<tr>
<th>Customer Advantages</th>
<th>Tech Data Benefits</th>
</tr>
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<tbody>
<tr>
<td>• Customer has expanded access to suppliers offerings</td>
<td>• Reduced SG&amp;A expenses from 6% to a company record low 4%</td>
</tr>
<tr>
<td>• Focus of call center is customer service rather than administrative support</td>
<td>• Increased annual sales by 45%, while increasing sales staff by 6%</td>
</tr>
<tr>
<td>• Delivery reliability is improved via automated mail order confirmation with link to order status inquiry page</td>
<td>• Invested roughly $16 million on tools, which has returned $41 million in 3 years, representing enhanced revenue, productivity increases and reduced operating costs</td>
</tr>
<tr>
<td>• Marketing and sales efforts can be concentrated on customer needs and seeking ways to provide additional value-added services to the customer</td>
<td></td>
</tr>
</tbody>
</table>
Support New Digital Channel

- Support New Digital Channel
- Integrate Extended Supply Chain
- Enable Value Net
- Enhance Functional Capabilities

Potential Opportunity

Customer and Supplier Impact
New digital channels can create considerable supply chain challenges, particularly if they bypass traditional distribution steps.

<table>
<thead>
<tr>
<th>Market Issues</th>
<th>Service Issues</th>
<th>Economic Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Small, dispersed orders</td>
<td>• Customer support requirements</td>
<td>• Insufficient consumer premium</td>
</tr>
<tr>
<td>• No “touch and feel”</td>
<td>• Limited shelf life</td>
<td>• Low-margin products – high-cost distribution</td>
</tr>
<tr>
<td>• Highly variable sales</td>
<td>• Large assortments</td>
<td>• Sub-scale distribution operations</td>
</tr>
<tr>
<td></td>
<td>• Fragile or temperature sensitive products</td>
<td>• Low-value product – high delivery-to-sales cost ratio</td>
</tr>
<tr>
<td></td>
<td>• Complex, multi-item orders</td>
<td>• Numerous sku’s and stock points</td>
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</tbody>
</table>
For example, the internet grocery channel, requiring home delivery, faces many of these challenges:

- Low order value – high cost-to-sales ratios
- Low profit margin in traditional channel
- Compressed delivery windows (before or after work)
- Large assortment of SKU’s – high inventory and order picking cost
- Specialized transportation and storage
- Few affluent areas with sufficient geographic/population density
Streamline’s supply chain is designed to overcome many of these challenges

- Customer selection
- Breadth of product line
- Alignment
  - The Box
  - Weekly unattended delivery
  - Auto replenishment
- Outsourced distribution centers
Many positives in an exciting market – jury remains out

Streamline success with customers . . .
• 90% retention
• 40+ deliveries per year
• $100 per order
• 94% consider Streamline primary provider of groceries and household goods/services
• 75% share of wallet

. . . Has attracted competition.
• ShopLink is imitator
  – Same suburbs of Boston
  – Same DC location
  – Same trucks
  – Same unattended delivery
  – On demand, not scheduled

Other models are surfacing . . .
• WebVan
  – $1 billion investment in automated DC
• Peapod
• Home Runs

. . . Profits are elusive so far.
• Not yet profitable
• Plan to build:
  – Scale
  – National presence
. . . but concept is attractive
• Borders/Shaheen
• NetGrocer/Amazon
Integrate Extended Supply Chain

Potential Opportunity

- Enhance Functional Capabilities
- Support New Digital Channel
- Integrate Extended Supply Chain
- Enable Value Net

Customer and Supplier Impact
E-commerce is being leveraged to integrate the extended supply chain

Level 1

- Procurement
- Manufacturing
- Logistics

Functional Silos

Level 2

Company Integration

Level 3

Extended Enterprise Integration

- Suppliers
- Company
- Customers
Integrating the extended enterprise requires advanced customer service and procurement practices.

Mercer Levels of Procurement Excellence

1. Leveraged Buy: Volume Consolidation/Supply Base Optimization
   - Leverage Points:
     - Utilize supplier fixed costs more fully
     - Exploit competitive supply base structure
     - Leverage buyer’s share
     - Enhanced negotiation and contracting skills

2. Linked Buy: Supplier-Buyer Integration/Linked Cost Minimization
   - Leverage Points:
     - Improved coordination/forecast accuracy and predictability
     - Optimized logistical flows/value added roles (including outsourcing)
     - Streamlined transactional information flow
     - Elimination of redundant/non-value added activities
     - Improved supplier cost productivity
     - Commitments to enable supplier investments

3. Value Buy: Specifications/Consumption Optimization
   - Leverage Points:
     - Increased and early supplier involvement in solution design
     - Reduced complexity/simplified specifications
     - Increased standardization
     - Clarified response time objectives
     - Rationalized requirements
     - Controlled consumption rates
     - Total cost of ownership perspective

4. Integrated Sell: Strategic Supplier Alliances
   - Leverage Points:
     - Integrate multi-company products/services and channel portfolio
     - Introduce creative risk sharing
     - Exploit supplier capabilities and potential
     - Manage complex channel relationships
     - Cross utilize infrastructure and operating resources among multiple parties in value chain
E-procurement, fully utilized, supports all levels of procurement excellence

E-Procurement Leverage Points

1. Leveraged Buy
   • Increased competitive tension
   • Enhanced buying power
   • Broadened supply options

2. Linked Buy
   • Purchasing/accounts payable transaction reduction
   • Streamlined user process
   • Enhanced service level with reduced inventory
   • Reduced supplier processing cost
   • Enhanced pricing accuracy
   • Improved product availability visibility
   • Enhanced access to short supply/end of life products

3. Value Buy
   • Reduced maverick buying
   • Enhanced consumption analysis capabilities
   • Enhanced design process efficiency and linkage
   • Streamlined maintenance/after sales service process
   • Enhanced project planning, execution, and inspection

4. Integrated Sell
   • Optimized value chain roles (e.g., Cisco, IBM)
   • Strategic control of supply
   • Reduced industry working capital intensity
**BASF uses the internet as a ‘low cost communications backbone for chemical companies moving toward supplier-managed inventory systems’**

<table>
<thead>
<tr>
<th>Innovation:</th>
<th>Information provision to suppliers</th>
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<tbody>
<tr>
<td>Value Proposition:</td>
<td>Increased collaboration with suppliers leading to reduced inventory and lower administration costs</td>
</tr>
<tr>
<td>Business Initiative:</td>
<td>Internet communication link allows suppliers (Monsanto Co., Union Carbide Corp.) to:</td>
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<tr>
<td></td>
<td>- Check BASF’s current inventory</td>
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<td>- Analyse historical usage</td>
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<td>- Calculate consumption forecasts</td>
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<td>- Move towards supplier-managed inventories</td>
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<td>- Use of telemetric devices to accurately measure stock levels</td>
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<td>- Stock replenishment occurs when inventory reaches a predetermined level</td>
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<td>- Development of consignment arrangements</td>
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<td>- BASF billed for consumption only</td>
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<td></td>
<td>- Suppliers receive more accurate demand data</td>
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<tr>
<td>Impact:</td>
<td>More accurate forecasting</td>
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<tr>
<td></td>
<td>Time savings</td>
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<tr>
<td></td>
<td>Reallocation of BASF human resources</td>
</tr>
<tr>
<td>e-commerce:</td>
<td>Internet, Web VMI</td>
</tr>
</tbody>
</table>

Source: ‘Supply-Side Economics - Manufacturers Turn To Supplier Managed Inventory With A Boost From The Internet’ Information Week, Nov 2, 1998.
Ford’s latest initiative aims to improve collaboration between the automotive manufacturer and its suppliers, dealers, and customers

<table>
<thead>
<tr>
<th>Innovation:</th>
<th>Web-based interface that provides Ford suppliers access to business processes. Implemented June 1, 1999</th>
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<tbody>
<tr>
<td>Value Proposition:</td>
<td>Reduce cycle time and inventory requirements by sharing data about business processes with suppliers, dealers, and customers</td>
</tr>
</tbody>
</table>
| Business Initiative: | Portal provides seamless access to Ford data  
- Product design information  
- Quality control  
- Sales and aftermarket services  
- User can customise interface  
- New format is easier to use  
- Launched with 1500 companies, 1100 of which provide production supplies  
- Next phase is to integrate supplier back ends with Ford systems to allow automated data flow |
| Impact: | Improved efficiency  
Increased access to data |
| e-commerce: | Internet |

Source: ‘Ford rebuilds extranet as supplier portal’, Internet Week, May 17, 1999
Cemex, a Mexican cement producer, has used technology to tightly integrate with customers and carriers

**Issue**
- Customers constantly canceling or changing orders and delivery times

**Solution**
- Central tracking and direction
- GPS in trucks
- Automatic re-optimization of delivery path

**Outcome**
- 20 minute delivery window vs. 2-3 hours
- 98% reliability vs. 34%
- Reduced truck fleet 30%
- Premium pricing
Cemex’s digital business design is a true industry breakthrough.

Return on Sales = EBITDA/Net Sales.
Innovators are replacing “supply chains” with “value nets”.

- Customer aligned
- Fast
- Digital
- Agile
- Collaborative
- Global
Dell revolutionized the PC industry through its “customer direct” marketing and its reinvention of the supply chain.

**Historical Challenges:**

- High inventory investments
- Short product lifecycles
- Proliferation of end product configurations
- Customized components
- Long supplier lead times and supply variability

**Dell Computers E-Commerce Solution**

By sharing all order information with its suppliers via electronic medium, Dell has been able to create a “virtual integration” where production is optimized throughout the system.

- **Customer Requirements**
  - Receive payment from customers immediately

- **Order Management**
  - Buy off-the-shelf components daily, and store them by the truckload within 50 feet of assembly line

- **Suppliers**
  - Assemble and ship each individually customized computer within five days of a customer’s placing an order

- **Assemble to Order**

- **Customer Satisfaction**
Dell’s supply chain innovations have driven phenomenal success

⇒ Because of its digitized system, Dell can operate with negative working capital and can increase its liquidity as it grows
Thought leaders believe value net attributes are the wave of the future

• “If you don’t think people are trying to move toward the Dell model in all industries, you’re crazy.”
  – Jeffrey Trimmer, Director of operations and strategy, procurement and supply, Chrysler

• “The real unsung hero is how to do the fulfillment process.”
  – Victor Fung, CEO of Li & Fung

• “We are selling speed and convenience, not just a hammer and a light bulb.”
  – Wes Clark, Group President, W.W. Grainger

• “The virtual model allows you to be reliable and turn a profit even when you are small.”
  – Mahmoud Ladjevardi, CEO, Soho Inc.

• “In the 70s companies were all concerned with costs . . . when the 80s came along, there was a very big refocusing on quality. Now in the 90s . . . the buzzword is time.”
  – Mel Friedman, President, Sun Microelectronics
Cisco streamlined its production processes through a linked programming and testing system with each of its key suppliers.

**Historical Challenges:**

- Network components production is a slow, highly technical process:
  - Multiple hand-offs for programming and testing
  - Significant physical movements and handling of work-in-process

**Cisco Systems E-Commerce Solution**

- Orders can be logged directly on the Cisco website (~70% of orders)
- Customized options and instantaneous pricing
- Orders routed directly to the contract manufacturer
- Software and/or applications requirements are automatically transmitted to a Cisco computer encoding and testing station at each supplier
- Customer information is logged automatically
- Product is shipped directly to the customer from the supplier (55% of all Cisco sales and rising)

- Manufacturers receive orders real-time and produce on a just-in-time basis
- Cisco computers at the supplier encode the parts with the required software
- Testing occurs at the site using the same system that encoded the product
Cisco is a truly digital company

Online Sales as Percent of Total Sales

- Buy
- Sell

Year:
- 1996
- 1997
- 1998
- 1999E
Cisco’s digital supply chain has generated enormous benefits

The Benefits of Electronically Managed Supplier Relations

- Estimated production cost savings of $500 million per year
- Inventory (DIOH) = 27 days, half of nearest competitor
- Time to market for new products reduced by 66% to 6 months
- Improved cycle times with greater customization

Cisco Systems Market Value Growth

Market Value CAGR (1996-Present) = 68%

1February 10, 1999.
Defining the Right Approach for Your Company
Diagnostic questions: Enhance functional capabilities

- How well does our administrative cost per dollar sales and dollar purchased benchmark with industry leaders?
- Are many of our sales and purchase orders paper, phone, or fax-based?
- Do our customer service reps and buyers spend a lot of time on small orders or administrative tasks?
- Does customer and supplier information (prices, specs, etc.) change frequently? Are we efficient at providing updates?
- Are we able to provide customers with immediate answers to their inquiries? 24x7?
- Do we have appropriate control and agility regarding our transportation and in-transit assets?
- Is our website essentially “brochure-ware”?
- How well do we understand our customers and how they use our product/service?
Diagnostic questions: Support new digital channel

- Will the new channel have significantly different order characteristics – size, mix, frequency, density, etc.?
- How will new order characteristics affect my distribution and service costs?
- How much additional cost can my product line support?
- What new distribution and service mechanisms must be put in place? Where should third parties be used?
- Do we really understand the service needs of any new customers?
- What strategic alliances would help our value proposition and our economics?
- Are completely new supply chain models needed to be profitable?
- How can we limit risk?
Diagnostic questions: Integrate extended supply chain

- Are there excessive levels of inventory across the extended supply chain? Obsolete inventory?
- Are customer needs clearly understood and met as they change over time?
- How quickly can we get new designs to market versus our competition?
- Are we fully leveraging our suppliers’ creativity in the design process?
- Could the customer design his/her own product and order?
- Have we maximized our purchasing leverage and supply options (beyond internal consolidation)?
- Is the user fully integrated into the procurement process?
- Do our suppliers have a clear picture of our changing needs over time? Would a clearer picture help their economics?
- How could improved information flow enhance our after-sales service process?
Diagnostic questions: Enable value net

- To what degree can “time” be a competitive weapon?
- Are there sequential activities in the extended supply chain that could be performed in parallel?
- Does a “one size fits all” supply chain appropriately satisfy customer needs and cost targets?
- How quickly could we expand or contract capacity or change geographic coverage if required?
- Are we performing activities that our customers or suppliers could more economically perform? Vice versa?
- Could our asset intensity be dramatically improved with a new business model?
- Are we under competitive threat from new business models? Could we be?
The right e-commerce solution may draw upon a number of different types of providers.

Software Solutions

Design Support

- SAP
- Oracle
- JD Edwards
- PeopleSoft
- i2
- Manugistics
- Aspect Development
- TPN Register

Sourcing Support

- Ariba
- CommerceOne
- Trilogy
- TradeX
- Rightworks
- Oracle
- IBM

Fulfillment Support

- Digital Market
- TradeX
- Polydyne

E-commerce Fulfillment

- Internetss
- Fingerhut
- Iconomy

Virtual 3PL

- Order Trust
- Keystone Fulfillment

Infomediaries

- iShip
- InterShipper
- Tranzlink
- PurchasingCenter

Digitally Marketed

TradeX
Polydyne

Indirect Materials

- Custom
- Standard
- Direct Materials

Direct Materials

SAP
Oracle
JD Edwards
PeopleSoft
i2
Manugistics
Conclusion: Takeaways

• E-commerce is not the goal, it is the enabler

• E-commerce should be thought of in terms of both selling and procurement processes

• E-commerce opportunities span the range from improving functional capabilities and reducing costs to enabling new business designs

• Value Nets may not be appropriate for all companies today, but is the model for where we believe all industries are headed long term

• The right e-commerce solution may draw upon a number of different types of providers
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