Chapter 12

B2B E-commerce: Supply Chain Management and Collaborative Commerce
Volkswagen Builds Its B2B Net Marketplace
Class Discussion

- Why didn’t Volkswagen want to use a more open or public electronic exchange for its parts supply? Why didn’t it join an industry consortium such as Covisint?
- What kinds of services are provided by VWGroupSupply?
- What is eCAP and who benefits from its use?
- Do you think suppliers are disadvantaged by this B2B marketplace?
Volkswagen Builds Its B2B Net Marketplace
Class Discussion

- VWGroupSupply illustrates the potential for B2B e-commerce to:
  - Lower production cost
  - Speed up new product delivery
  - Revolutionize manufacturing process and supply purchasing
Covisint LLC: The Mother of All Net Marketplaces
Defining B2B Commerce

- Before Internet, B2B transactions called trade or procurement process
- Total inter-firm trade: Total flow of value among firms
- B2B commerce: All types of computer-enabled inter-firm trade
- B2B e-commerce (Internet-based B2B commerce): That portion of B2B commerce that is enabled by the Internet
The Evolution of B2B Commerce (cont’d)

- Automated order entry systems
  - Involve the use of telephone modems to send digital orders.

- Seller-side solutions
  - Seller biased markets that are owned by and show only goods from a single seller.

- Buyer-side solutions
  - Buyer-biased markets that are owned by buyers and that aim to reduce the procurement costs of suppliers for buyers.

- Vertical & horizontal markets.
The Evolution of B2B Commerce (cont’d)

- 1990s: B2B electronic storefronts -- online catalogs of products made available to the public marketplace by a single supplier
- Late 1990s: Net marketplaces – bring hundreds to thousands of suppliers and purchasers into a single Internet-based environment to conduct trade
- Late 1990s: Private industrial networks – Internet-based communication environments that extend beyond procurement to encompass collaborative commerce
The Evolution of the Use of Technology Platforms in B2B Commerce

Figure 12.1, Page 771
The Growth of B2B E-commerce

- B2B e-commerce
  - 2008: $3.8 trillion
  - 2012: $6.3 trillion
- Electronic marketplaces will not be dominant form of B2B e-commerce
- Private industrial networks continue to play dominant role in B2B
- Non-EDI B2B e-commerce most rapidly growing type of e-commerce
- Over 80% U.S. firms buy some indirect goods over Internet; 70% buy some direct goods over Internet
Growth of B2B Commerce 2001-2010
Potential Benefits of B2B E-commerce

- Lower administrative costs
- Lower search costs for buyers
- Reduced inventory costs by:
  - Increasing competition among suppliers (increasing price transparency)
  - Reducing inventory carried
- Lower transaction costs by:
  - Eliminating paperwork
  - Automating parts of procurement process
Potential Benefits (cont’d)

- Increased production flexibility by ensuring just-in-time parts delivery
- Improved quality of products by increasing cooperation among buyers and sellers
- Decreased product cycle time by sharing of designs and production schedules
- Increased opportunities for collaborating with suppliers and distributors
- Greater price transparency
The Procurement Process and the Supply Chain

- **Procurement process:**
  - The way firms purchase the goods they need to produce the goods they sell

- **Supply chain:**
  - Firms that purchase goods, their suppliers, and their suppliers’ suppliers, and relationships and processes involved
  - Includes not just the firms themselves, but also the relationships among them and the processes that connect them
Steps in the Procurement Process

- Steps in procurement process
  - Deciding who to buy from and what to pay
    - Search for suppliers of specific products
    - Qualify both seller and products they sell
    - Negotiate prices, credit terms, escrow, quality, schedule
  - Completing transaction
    - Issue purchase order
    - Invoice issued
    - Goods shipped
    - Payment
# The Procurement Process

**Figure 12.3, Page 776**

<table>
<thead>
<tr>
<th>Search</th>
<th>Qualify</th>
<th>Negotiate</th>
<th>Purchase Order</th>
<th>Invoicing</th>
<th>Shipping</th>
<th>Remittance Payment</th>
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| Catalogs  
Internet  
Salespersons  
Brochures  
Telephone  
Fax | Research  
Credit History  
Check with  
Competitors  
Telephone  
Research | Price  
Credit Terms  
Escrow  
Quality  
Timing | Order Product  
Initiate  
Purchase  
Order (PO)  
Enter into  
System  
Mail PO | Receive PO  
Enter into  
Financial  
System  
Enter into  
Production  
System  
Send Invoice  
Match with PO  
Internal Review  
Enter into  
Warehouse  
System | Enter into  
Shipper's  
Tracking  
System  
Ship Goods  
Deliver Goods  
Enter into  
Tracking  
System | Receive Goods  
Enter Shipping  
Documents into  
Warehouse  
System  
Verify and  
Correct  
Invoice  
Resend Invoice  
Cut Check  
Add Corrected  
Invoice to  
Back Office  
Systems |
Types of Procurement

- **Types of goods**
  - Direct goods: Goods integrally involved in production process
  - Indirect goods: All other goods not directly involved in production process (MRO goods)

- **Methods of purchasing**
  - Contract purchasing: Involves long-term written agreements to purchase specified products, with agreed-upon terms and quality
  - Spot purchasing: Involves purchase of goods based on immediate needs in larger marketplaces that involve many suppliers
Types of Procurement (cont’d)

- Procurement is highly information intensive and labor intensive – 3.5 million U.S. workers
- Use of Internet can simplify process and reduce search, research, negotiating costs
- Multi-tier supply chain
  - Complex series of transactions between firm and thousands of suppliers:
    - Primary suppliers
    - Secondary suppliers who do business with primary suppliers
    - Tertiary suppliers who do business with secondary suppliers
The Multi-Tier Supply Chain

Figure 12.4, Page 778

Tier 3
SELLERS
Tier 2
Tier 1
BUYER
The Role of Existing Legacy Computer Systems

- Legacy computer systems
  - Generally older mainframe and minicomputer systems used to manage key business processes within firm

- MRP systems (Materials requirements planning)
  - Enable firms to predict, track, and manage parts of complex manufactured goods

- ERP systems (Enterprise resource planning)
  - More sophisticated MRP systems that include human resources and financial components
Trends in Supply Chain Management and Collaborative Commerce

- Supply chain management crucial to understanding B2B e-commerce

- Supply chain management (SCM):
  - Wide variety of activities that firms and industries use to coordinate key players in their procurement process

- Major developments in supply chain management
  - Supply chain simplification
  - Electronic data interchange
  - Supply chain management systems
  - Collaborative commerce
Supply Chain Simplification

- Essential for just-in-time production models
- Firms work closely with a strategic group of suppliers to reduce product and administrative costs, while improving quality
- Typically achieved by:
  - Working with strategic group of suppliers to reduce product and administrative costs, while improving quality
  - Purchasing under long-term contracts that contain specified quality, cost, and timing goals
- May involve
  - Joint product development and design
  - Integration of computer systems
  - Tight coupling (method of ensuring that suppliers precisely deliver ordered parts at specific time and to particular location, to ensure production process is not interrupted)
Electronic Data Interchange (EDI)

- Broadly defined communications protocol for exchanging documents among computers

  - Stage 1: 1970s-1980s
    - Originally focused on document automation

  - Stage 2: Early 1990s
    - Began to focus on document elimination

  - Stage 3: Mid-1990s
    - Movement toward continuous replenishment/access model

- Today:
  - EDI viewed as general enabling technology that provides for exchange of critical business information between computer applications supporting wide variety of business processes
The Evolution of EDI as a B2B Medium

Figure 12.5, Page 781

1. Document Automation
   - Supplier Computer
   - Purchase Orders
   - Payments
   - Shipping Notices
   - Price Schedules
   - Invoices
   - Firm Computer

2. Document Elimination
   - Supplier Computer
   - Production Schedule
   - Delivery Schedule
   - Payment Schedule
   - Shipping Orders
   - Firm Computer

3. Continuous Replenishment
   - Supplier A Production System
   - Continuous Replenishment
   - Supplier B Production System
   - Payment on Use
   - Supplier C Production System
   - Shipping Data
   - Supplier D Production System
   - Firm Computer
Supply Chain Management Systems

- Continuously link activities of buying, making, and moving products from suppliers to purchasing firms
- Integrates demand side of business equation by including order entry system in the process
- With SCM system and continuous replenishment, inventory is eliminated and production begins only when order is received
- Hewlett Packard’s SCM system: Elapsed time from order entry to shipping PC is 48 hours.
Supply Chain Management Systems

Figure 12.6, Page 783
Insight on Technology

RFID Autoidentification: Making Your Supply Chain Visible

Class Discussion

- Why is RFID an improvement over bar codes?
- How does RFID work?
- Why is Wal-Mart supporting RFID?
- What impact will widespread adoption of RFID have on Internet B2B commerce?
Collaborative Commerce

- Direct extension of SCM systems and supply chain simplification
- Use of digital technologies enabling organizations to collaboratively design, develop, build, and manage products through life cycles
- Involves move from transaction focus to relationship focus among supply chain participants
- Unlike EDI, more like an interactive teleconference among members of supply chain
- Example: Group Dekko
Elements of a Collaborative Commerce System

Figure 12.7, Page 786

Engineering Systems
- CAD Drawings
- Bills of Material

ERP Systems
- Inventory
- Production Schedules
- Demand Forecasts

Central Data Repository

Workflow Engine

Universal Viewer

Product Designer Firm

Manufacturing Firm Production Engineers
Main Types of Internet-Based B2B Commerce

- **Net marketplaces:** Bring together potentially thousands of sellers and buyers in single digital marketplace operated over Internet
  - Transaction-based
  - Supports many-to-many as well as one-to-many relationships
- **Private industrial networks:** Bring together small number of strategic business partner firms that collaborate to develop highly efficient supply chains
  - Relationship-based
  - Support many-to-one and many-to-few relationships
  - Largest form of B2B e-commerce
Two Main Types of Internet-Based B2B Commerce

Figure 12.8, Page 787
Net Marketplaces

- Various ways to classify Net marketplaces:
  - Pricing mechanism
  - Nature of market served
  - Ownership

- Can also classify by business functionality
  - What businesses buy (direct vs. indirect goods)
  - How business buy (spot purchasing vs. long-term sourcing)

- Four main types
  - E-distributors
  - E-procurement networks
  - Exchanges
  - Industry consortia
Pure Types of Net Marketplaces

Figure 12.9, Page 789

WHAT BUSINESSES BUY

Indirect Inputs

E-distributor
- Grainger.com
- Staples.com

Direct Inputs

Independent Exchanges
- Foodtrader.com
- Farms.com

HOW BUSINESSES BUY

Spot Purchasing

Long-term Sourcing

E-procurement
- Ariba Supplier Network
- Click2procure
  (Siemens)

Industry Consortia
- Exostar.com
- Elemica.com
- Dairy.com

Horizontal Markets

Vertical Markets
Characteristics of Net Marketplaces

- **Bias**
  - Seller vs. buyer vs. neutral

- **Ownership:**
  - Industry vs. third party

- **Pricing mechanisms**
  - Fixed price catalogs, auctions, bid/ask, RFPs/RFQs

- **Scope/Focus**
  - Horizontal vs. vertical markets

- **Value Creation**
  - What benefits offered customer?

- **Access to Market**
  - Public markets vs. private markets
Other Characteristics of Net Marketplaces: A B2B Vocabulary

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bias</td>
<td>Sell side vs. buy side vs. neutral. Whose interests are advantaged: buyers, sellers, or no bias?</td>
</tr>
<tr>
<td>Ownership</td>
<td>Industry vs. third party. Who owns the marketplace?</td>
</tr>
<tr>
<td>Pricing mechanism</td>
<td>Fixed price catalogs, auctions, bid/ask, and RFPs/RFQs</td>
</tr>
<tr>
<td>Scope/Focus</td>
<td>Horizontal vs. vertical markets</td>
</tr>
<tr>
<td>Value creation</td>
<td>What benefits do they offer the customer?</td>
</tr>
<tr>
<td>Access to market</td>
<td>In public markets, any firm can enter, but in private markets, entry is by invitation only.</td>
</tr>
</tbody>
</table>
E-distributors

- Most common type of Net marketplace
- Provide electronic catalogs that represent products of thousands of direct manufacturers
- Typically independently owned intermediaries that offer industrial customers single source from which to order indirect goods on spot basis
- Typically operate in horizontal markets because they serve many different industries with products from many different suppliers
- Usually fixed price with discounts for large customers
- Example: W.W. Grainger
E-distributors

Figure 12.10, Page 790
Product Categories

Grainger is a leading provider of top-quality industrial supplies worldwide. We carry the brands you trust, along with money-saving alternatives to suit any budget. We add new products nearly every day to make sure we offer the latest, high-quality products. We also provide product services such as lighting upgrades, lighting project management, hazardous recycling services, storage equipment/installation and safety services, along with specific product resources for many of your operation’s most pressing needs.
E-procurement Net Marketplaces

- Independently owned intermediaries connecting hundreds of online suppliers offering millions of indirect goods to business firms who pay fees to join the market
- Typically used for long-term contractual purchasing of indirect goods
- Revenues from transaction fees, licensing consultation services and software, network fees
- Include online catalogs of hundreds of suppliers
- Offer value chain management (VCM) services
  - Automation of entire procurement process on buyer side, automation of selling business processes on seller side
- Many-to-many market
- Example: Ariba, CommerceOne
E-procurement Net Marketplaces

Figure 12.11, Page 792
E-commerce in Action: Ariba

- Ariba Supplier Network: Internet-based network that connects suppliers to customers and their partners
- Also offers Spend Management solutions to manage all of a company’s non-payroll expenses
- Ariba’s original vision was to revolutionize procurement and supply process in large corporations
E-commerce in Action: Ariba (cont’d)

- Has faced many difficulties in bringing this vision to fruition
  - Implementation of its software by large companies is complex, time consuming and expensive
  - Failed to understand power of existing and Web-based EDI systems
  - Competitive response from other major technology players
  - Difficulties getting suppliers to join Ariba Supplier Network
- Currently operating at significant net loss; future prospects not great
Exchanges

- Independently owned online marketplaces that connect hundreds to potentially thousands of suppliers and buyers in dynamic, real-time environment
- Typically vertical markets focusing on spot purchasing requirements of large firms in single industry
- Make money by charging commission on transaction
- Variety of pricing models used
  - Online negotiation, auction, RFQ, fixed
- Tend to be buyer-biased
- Suppliers disadvantaged by competition
- Many have failed due to low liquidity (typically measured by number of buyers and sellers in market, volume of transactions and size of transactions)
Exchanges

Figure 12.12, Page 800

Buyer Firms

Electronic Marketplace

Suppliers

Market Maker’s Proprietary Software Envelope
## Example Independent Exchanges

<table>
<thead>
<tr>
<th>EXCHANGE</th>
<th>FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange.e-steel.com</td>
<td>Spot market for steel products</td>
</tr>
<tr>
<td>Smarterwork.com</td>
<td>Spare professional services from Web design to legal advice</td>
</tr>
<tr>
<td>Activeinternational.com</td>
<td>Trading in underutilized manufacturing capacity</td>
</tr>
<tr>
<td>Foodtrader.com</td>
<td>One of the largest B2B spot trading sites for the food products industry</td>
</tr>
<tr>
<td>Powerfarm.com</td>
<td>Online spot purchasing for the farm industry</td>
</tr>
<tr>
<td>Carrierpoint.com</td>
<td>Spot market for the trucking industry</td>
</tr>
</tbody>
</table>
Industry Consortia

- Industry-owned vertical markets that enable buyers to purchase direct inputs from limited set of invited participants
- Emphasize long-term contractual purchasing and development of stable relationships
- Ultimate objective: Unification of supply chains within entire industries through common network and computing platform
- Make money from transaction and subscription fees
- Offer many different pricing mechanisms
  - Auctions, fixed prices, RFQs, negotiated
- Can force suppliers to use consortia’s networks
Reduce risk. Lower costs. Improve speed-to-value.

Please click above to contact our Customer Support team.

Please click below to receive Exostar news & updates

**GET CONNECTED**

**Major Customers**

- **BAE Systems**
  
  Selected Exostar to extend business processes from multiple ERP systems, including SAP and Oracle, to their global supply base.

- **Boeing**
  
  Use Exostar to collaborate with global partners. Today, Boeing has over 20 different ERP systems integrated to Exostar, including BAAN, Oracle and legacy systems. The 787 program uses Exostar's Supply Chain Platform to enable its partner-based manufacturing strategy.

**Business Transformations**

**Exostar Products**

- B2B Supplier Network
- Supply Chain Platform (SCP)
- Auctions, eRFQ, Sourcing
- eProcurement (Catalogs)
- ForumPass
- SecureForms
- Federated Identity Service (FIS)

- B2B Supplier Network
- Auctions, eRFQ, Sourcing
- ForumPass
- Supply Chain Platform
- CardPath PKI Cross-Certification

"...they have added functionality needed in the community, and [developed] unique approaches to problems that others have struggled with in e-business. A good example of this is their security set, which addresses identity management issues in e-commerce."

- Jim Newman, Director of Enterprise Supply Chain Technology, Raytheon

"...very easy to use and very easy to work with.

- Ron Shelley, Boeing Vice President of Supplier Management for Integrated Defense Systems and Global Sourcing

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Industry Consortia

Figure 12.13, Page 803

[Diagram showing Industry Consortia with layers: Value-added Supply Chain Services, Vertical Industry Consortia, Value-added Transaction Services, Market Maker’s Proprietary Software Envelope, and Buyer Firms and Suppliers.]
Market Mechanisms Used by Industry Consortia

- RFP, RFQ, Reverse Auction: 13%
- Workflow Collaboration: 6%
- Exchange: 17%
- CPFR: 8%
- Catalog Aggregator: 31%
- Auction: 25%

Figure 12.16, Page 751
The Long-Term Dynamics of Net Marketplaces

- Pure Net marketplaces moving away from simple “electronic marketplace” vision and toward more central role in changing procurement process
- Consortia and exchanges beginning to work together in selected markets
- E-distributors joining large e-procurement systems and industry consortia as suppliers
- Movement from simple transactions involving spot purchasing to longer-term contractual relationships involving both direct and indirect goods
- Buyers and suppliers acclimatizing to digital environment
Net Marketplace Trends

Figure 12.14, Page 806

WHAT BUSINESSES BUY

Indirect Inputs

Direct Inputs

E-distributor

Exchanges

E-procurement

Industry Consortia

HOW BUSINESSES BUY

Spot Purchasing

Long-term Sourcing

Slide 12-51
What Are Private Industrial Networks?

- Private trading exchanges (PTXs)
- Web-enabled networks for coordination of trans-organizational business processes (collaborative commerce)
  - Direct descendant of EDI; closely tied to ERP systems
  - Typically involve manufacturing and support industries
  - Typically center around single, very large manufacturing firm that sponsors network
- Range in scope from single firm to entire industry
- Example: Procter & Gamble
Procter & Gamble’s Private Industrial Network

Figure 12.15, Page 809

SUPPLIERS
(Procter & Gamble)

MANUFACTURERS
(Spartan Stores)

DISTRIBUTORS

RETAILERS
(JCPenney)

CUSTOMERS

EDI (OBI) Supply Chain Management Systems — Efficient Customer Response Systems

Private Industrial Network

Point of Sale Data
Characteristics of Private Industrial Networks

- Objectives include:
  - Efficient purchasing and selling business processes industry-wide
  - Industry-wide resource planning to supplement enterprise-wide resource planning
  - Increasing supply chain visibility
  - Closer buyer-supplier relationships
  - Operating on global scale
  - Reducing industry risk by preventing imbalances of supply and demand

- Focus on continuous business process coordination

- Typically focus on single sponsoring company that “owns” the network
Insight on Business

Wal-Mart Develops a Private Industrial Network

Class Discussion

- What is Wal-Mart’s Retail Link system and how has it changed since the early 1990s?
- What is a “collaborative forecasting, planning and replenishment” system?
- Why is Wal-Mart still using EDI-based systems?
- Why won’t Wal-Mart join in an industry-backed system?
Private Industrial Networks and Collaborative Commerce

- Forms of collaboration:
  - Collaborative resource planning, forecasting, and replenishment (CPFR):
    - Working with network members to forecast demand, develop production plans, and coordinate shipping, warehousing and stocking activities to ensure that retail and wholesale shelf space is replenished with just right amount of goods
  - Demand chain visibility
  - Marketing coordination and product design
    - Can ensure products fulfill claims of marketing
    - Feedback enables closed loop marketing
Pieces of the Collaborative Commerce Puzzle

Figure 12.16, Page 811
Implementation Barriers

- Concerns about sharing of proprietary, sensitive data
- Integration private industrial networks into existing ERP systems and EDI networks difficult, expensive
- Requires change in mindset and behavior of employees and suppliers
Industry-Wide Private Industrial Networks

- Successful single firm networks adopted by entire industry
- P&G system sold to IBM, re-sold to entire consumer products industry in U.S.
- ISYNC – manufacturers in alcohol and beverage, automotive, entertainment, grocery, healthcare, office supplies industries
- Agentrics – founded by world’s largest retailers; focuses on auctions, services for retail industry
An Industry-Wide Private Industrial Network

Figure 12.17, Page 815
Changing the way the world trades

Agentrics is a global provider of retail & supply chain solutions. We provide leading retailers, brands and manufacturers with business solutions that enable them to:

- Launch more products - faster
- Achieve significantly higher inventory turns
- Make massive savings through efficient sourcing
- Benchmark performance against the world's best

**Fast Facts**

**Agentrics Product Lifecycle Management (PLM)**
- Increase throughput by 300% - no cost increase
- Speed to Market improvement 20–40%
- Meet compliance regulation & grow volume

**Agentrics Supply Chain Synchronization (SCS)**
- Increase sales 10–25%
- Decrease inventory 20–50%
- Minimized out-of-stock situations

**Our Customers**

We work with the world's largest brands...

- Ahold
- Arcandor
- Ahold Alcampo
- Auchan
- Ahold M. Abuhab Participações
- NeoGrid

Agentrics and Neogrid are the operating companies of MAP.

The Agentrics solution "...helped to lower carrying costs, increase turns, allowed us to be first to market with new items and raise profits through enhanced operational efficiencies." - Walgreens, Procurement Executive (USA)