The New Economics of E-Commerce: Interpreting the Marketplace

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He has twice co-chaired the annual Workshop on Information Systems and Economics (WISE) Rob also acts as an associate editor for Management Science, International Journal of Electronic Commerce, International Journal of Intelligent Systems in Accounting, Finance and Management, Journal of Management Information Systems, and the newly-announced Information Systems and E-Business Management. His newest research article, due out in Organization Science in November/December 2001, is on reservation system competition in the airline industry. He also completed a special issue of the Journal of Management Information Systems on “Economics, Electronic Commerce and Organizational Strategy,” which is due out in Fall 2001. This follows up a prior issue of Communications of the ACM that he edited in August 1998 on “Economics and Information Systems.” In his spare time, Rob likes to travel, sail small boats, and play the piano. He lives with his wife, Jean, and daughter, Lauren, in Bloomington, Minnesota.
‘The EBay of Blank … ?’

- Internet IPOs: Wit Capital
- On-line stock trading: Charles Schwab
- Electronics retailing: Buy.com
- Books: Amazon.com
- B2B E-Markets: E-Steel.com

But the opportunities aren’t like they used to be – at least when venture capital is required.
e-STEEL™ is an internet software company that creates competitive advantage for buyers and suppliers of direct materials. We build and operate web-based applications that enable you to manage your supply network transactions, information, and partner relationships. Our solutions enable buyers to manage the full procurement cycle to reduce material costs, improve quality, and increase flexibility. Suppliers are able to control sales channels to increase customer loyalty, reduce costs, and speed inquiry to payment. e-STEEL has a proven track record for delivering the solution that meets your specific business requirements on time and on budget.

The e-STEEL SupplyNetwork™ enables any company involved in the direct materials supply chain to leverage web-based technology to manage their supply network. Network Sponsors and Members can conduct the full range of transactions from inquiry to settlement and capture all transactional information in one place to monitor

"...I don't think it's time to ease up. To back off on our e-initiatives is to basically back off on the business. It's everything we touch now. You can't retreat."

-- Jacques Nasser, CEO of Ford Motor Co.

Business 2.0
May 29, 2001

"Our partner e-STEEL has successfully demonstrated its ability to deliver an enhanced and extended platform that combines existing and new applications, and features an increased level of flexibility."

-- Kirby Adams, President of BHP Steel
Driving Principles in Electronic Commerce?

Ask: What principles can be leveraged for competitive advantage in your context?

- Space
- Time
- Value
- Efficiency
- Markets
- Transactions
- Impulse
- Growth
- Matter
- People

Why Examine E-Commerce from Economics Perspective?

- Depth and breadth of the applicable theory
- Maturity, rigor and precision of the analytical techniques
- Natural emphasis on decisionmakers, products, processes, firms, markets and aggregate economic behavior
- Power of econometric methods to handle large-scale data analysis
A Framework for E-Commerce Research

AGGREGATED

MACRO

PRODUCTS

TECHNOLOGY

MARKETS

BUSINESS PROCESSES

ANALYSIS LEVELS

DEFINE

ENABLES

DEFINE

ENABLES

ENABLES

AGGREGATE

AGGREGATE

DISAGGREGATED

ACTORS

VALUE MAKERS

VALUE TAKERS

FIRMS --
Competitors
Alliances
Industries

CONSUMERS --
Society
Groups
Individuals

USE

USE
<table>
<thead>
<tr>
<th>LEVEL OF ANALYSIS</th>
<th>INFORMATION TECHNOLOGY</th>
<th>RELEVANT ECONOMIC THEORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Agent technology, network infrastructure, structural standards (TCP/IP, HTML, XML, objects, middleware, encryption, etc.)</td>
<td>Public goods theory, efficient pricing, game theory, negotiation, network externalities and standards</td>
</tr>
<tr>
<td>Product</td>
<td>Digital products, information, information goods, services</td>
<td>Pricing theory, versioning, information goods, switching costs, network externalities and standards, economies of scale and scope</td>
</tr>
<tr>
<td>Business Process</td>
<td>EDI, interorganizational systems, browsers, email, intranets and extranets</td>
<td>Adoption theory, economics of design, cost-benefit analysis, allocation of benefits, IT value, negotiation, economies of scale and scope, game theory</td>
</tr>
<tr>
<td>Market</td>
<td>Internet-based businesses, electronic markets, financial services and analytics</td>
<td>Auction theory, industrial organization, transaction costs, market microstructure, intermediation, adoption and diffusion, perfect competition, returns to scale, optimal market structure</td>
</tr>
<tr>
<td>Macroeconomy</td>
<td>World Wide Web, Internet-based corporate recruiting, new labor markets, electronic payments, fraud and security</td>
<td>Monetary economics, taxation theory, labor economics, regulatory economics, public goods</td>
</tr>
</tbody>
</table>
Let’s Talk About …

- I. Technologies
- II. Business processes
- III. Electronic markets and e-intermediation
- IV. Firm strategies in the marketplace

… all through the interpretative lens of economic theory and thinking
I. Technologies
Initial Words for the Network-Wise

“Almost any decision about a given technical solution will be risky, until it becomes clear than there is sufficient installed base for the solution to become cost-effective and value-effective as a network.”

- Standards combat among e-commerce solution providers complicate matters
There are many domains in e-commerce in which standards combat is occurring:

- DotCom and e-business infrastructures
- Web-based travel reservation systems
- Internet-based B2B procurement markets

E-billing is a good example -- no longer a revolution, but an evolution that we are seeing in the marketplace ... and it's focused on IT
Integrion’s Solution Sounded Great

Owners included:
• B of A
• Citibank
• and more banks
• IBM

In theory, at least ..........
Microsoft is behind Transpoint too. What does this tell us? And so is Citibank ... Real options, here, don’t you think? Nobody knew how this combat would come out.
Network Externalities Tell You

- The value of a technology standard increases with the number of adopters.
- Externalities grow over time.

How will we know what the value trajectory will be?
Amidst This Standards Combat

- Senior managers must think about IT investments consistent with the value trajectory for network externalities
- Don’t want to get on the wrong “bandwagon”
- So waiting has “real option value”
Tap Into Installed Base

- Larger network *installed bases* are consistent with higher valuation and earlier corporate adoption of technological innovations

- Installed base: examples --
  - number of vendors in an e-billing network
  - number of search engine users
  - number of firms using XML
  - number of buyers/sellers in an e-auction
But Timing is a Big Gamble

- Whom do we bet on?
  - Banks?
  - Consolidators?
  - Internet portals?
  - Software solution vendors?

- **Translation**: Who’s in the position to generate the greatest externalities soon?
Seek Out “Spatial” Externalities, Too

eBay’s recent alliance with AutoTrader.Com is a good case in point: excellent externality growth, but regional focus.
"Take advantage of the wisdom of the market in gauging the value of standards; markets, even if they are wrong sometimes, are usually not wrong for long."
11. Business Processes
IT Used to Mass Customize in E-Commerce

- **The product:**
  - physical goods and information goods
  - create unique product bundles

- **The selling process:**
  - one-on-one marketing with IT
  - create unique value propositions by segment
IT used to selectively commoditize products to create liquidity.
A trusted third-party made all the difference in enhancing transactability of used cars in this e-market.
IT Used for Product Rebanding

- Natural market re-segmentation based on consumer preferences
- “Death spiral” and “adverse selection”
- Product and service, or both?

Leverage the unique capabilities of the firm with IT
Merrill Lynch

Individual Investors
Realize your financial goals with solutions customized to your needs.
Choose your country:
United States

Small/Mid-Market Businesses
Power your small or midsize business with innovative cash management, lending and advisory services.
Ask Merrill

Corporations and Institutional Investors
Access MLX, our institutional investor portal. Get the latest on our capital markets capabilities and online alliances.
Ask Merrill

Invest with one of the world's largest asset managers

Gain insight from our award-winning research team

"Best Online Brokers" — In Money magazine's 2001 survey of online brokers, Merrill Lynch Direct ranked second overall.

Innovation Grants Awarded — From jet-engine-powered batteries to seaweed for a new class of antibiotics, we help bring academic research to the marketplace.

Merrill Lynch HSBC - UK — Merrill Lynch HSBC announced the launch of its full transactional service for U.K. private investors.

More Headline News...

We put our intelligence to work for clients every day.
Add Agents to the Process

- Everything we sell is going to the Internet, where business and retail customers can easily compare prices, service

- **Ask**: Are your “agents” working for you?
III. Electronic Markets and E-Intermediation
**Market News**

**Rooster Call℠**
05/25/2001--Some signs of heat returning to the Midwest/Plains. Will recent soybean/soymeal buyers look to take profits in front of the long weekend?

*Written by: Duane Lowry*

- **Previous Rooster Calls℠**

**Daily Feature**

**Agrinet**

**The Market at Your Fingertips**
Monday, May 28, 2001 -- For all things market-wise, you're likely to find it here.

*Written by: Laura Engelson, Farm Progress*

- **Previous Daily Features**

**Ag News**

**WorldTrak: UN Program Aims for School Lunch**

*Written by: Editors, Farm Progress*

**Decision Making in the Digital Age**
Monday, May 28, 2001 -- Don't let information overload delay decisions.

*Written by: Dale McDonald, Rooster News Network*

**A Beefy Day**
Monday, May 28, 2001 -- Americans still like their beef -- especially this weekend. Memorial Day is the beefiest holiday of them all.
Operational Efficiency -- An Intermediary Issue

- Reduce your costs by engaging the “right” kinds of middlemen
  - B2C: infomediaries
  - B2B: e-procurement exchanges

- Ask: How can we provide aggregation, buying power, matching and business intelligence? And more?
Traditional Industry Value Chain -- Retail Example

Ask: Are the value chain costs acceptable?

<table>
<thead>
<tr>
<th></th>
<th>Producer</th>
<th>Wholesaler</th>
<th>Retailer</th>
<th>Consumer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Added</td>
<td>$20.45</td>
<td>$11.36</td>
<td>$20.91</td>
<td>$52.72</td>
</tr>
<tr>
<td>Selling Price</td>
<td>$20.45</td>
<td>$31.81</td>
<td>$52.72</td>
<td>$52.72</td>
</tr>
</tbody>
</table>

Identify Your Alternative Industry Value Chains

**Traditional Value Chain**
- Producer
- Wholesaler
- Retailer
- Consumer

**Partial Value Chain Disintermediation**
- Producer
- Wholesaler
- Retailer
- Consumer

Cost: $52.72

Cost: $41.34

**Full Value Chain Disintermediation**
- Producer
- Wholesaler
- Retailer
- Consumer

Cost: $20.45
Fig. 3: Models for Trade Between Buyers and Sellers

The Direct Model

The Net Market Model
Leverages an Online Intermediary to Introduce the Buyer to the Seller.

Models for Trade Between Buyers and Sellers, 1997-2003

B2B Procurement Markets

Support market functions and mgmt requirements
Provide technology infrastructures, business models
Function as “technology adapters” in marketplace

Basic Market Functions:
- Aggregation
- Matching
- Facilitation

Management Needs:
- Market intelligence
- Business relationships
- Business processes

Technology Adapters:
- Integrators
- Standards providers
- Outsourcing vendors

Source: Dai and Kauffman (2001)
E-Market Function: Aggregation

- **Private, buyer-specific e-cataloging**
  - Pre-qualified suppliers
  - Prices are negotiated offline
  - System integration and connectivity is important
  - Schlumberger, Inc., and CommerceOne

- **Public, buyer-neutral e-cataloging**
  - Adopted for purchases in small lot quantities
  - Demand is of low predictability and high variety
  - Low price volatility
  - SciQuest.com
SciQuest.com aggregates product catalogs for pharmaceutical, chemical and biotechnology industries.

- Lists 600 suppliers, and more than 1 million products.
- Buyers can search and shop among all catalogs.

Source: www.SciQuest.com
Novopoint is an Industry Operating System (I-OPS) that connects buyers and sellers of food and beverage ingredients and related services and gives them a one-point resource through which they can integrate and gain access to mission-critical services and information.

Companies of all sizes can take advantage of Novopoint's hosted, browser-based access to exchange critical information and conduct business over the Internet.

By reducing transactional and logistical workloads, Novopoint will enable buyers and sellers to concentrate on strengthening their strategic relationships while extracting even more value from their supply chains.
E-Market Function: Matching

- **Private negotiation mechanism**
  - Preselect participants for bids
  - Used for purchasing direct goods in large quantities
  - e-Steel.com

- **Public bidding mechanism**
  - Open bids
  - Especially suitable for exchange excess capacities and inventories
  - FastParts.com
Public Bidding: FastParts.com

- To serve procurement professionals with "excess inventories on cancelled jobs and inventory shortages for unforecasted orders".

- In SOLD!Auction, sellers post offers to all members who bid against each other in an anonymous context.

Source: www.FastParts.com
The Information Resource and Marketplace

Pradium Inc. will operate an online information resource and marketplace for buyers and sellers of cash grains, oilseeds, and by-products. Best of class market information combined with our unique dynamic order-matching environment makes

Pradium...the ultimate toolkit for agricultural commodity marketing.

Pradium gives you the tools you need to be even more productive and competitive - streamlined news, weather, quotes, expert commentary, and virtual trading pits all in one location. Initial trading will include nine virtual trading pits devoted to trading cash corn and soybeans, as well as commodity by-products: wheat middlings, soy hulls, corn gluten feed, corn gluten meal, meat and bone meal, corn hominy, and distillers dried grains.

To be ready for the opening bell, please complete our brief Information Request. We'll keep you informed of our latest announcements, send you a Pradium site demonstration CD, and let you know when trading will begin!
E-Market Function: Facilitation

- **Online transaction settlement**: Net market makers are partnering with financial institutions and transportation providers to offer services for transaction settlement.

- **Procurement expertise**: General and industry-specific purchasing expertise are value-adding services provided by online markets.
Online Financial Services

- **Internet-based financial services**: Electronic payment, electronic invoicing, credit facilities, foreign exchange, wire transfer, and automatic clearinghouse.

- **For example**: Ariba is partnering with American Express and Bank of America to develop a line of B2B online financial service.

*Source: www.Ariba.com*
Settlement for Delivery

- **Delivery and logistics:** Smooth information flow among multiple players in the process of delivery is the focus.

- E-markets specialized in delivery and transportation become logistics providers for other e-markets.

- **Example:** Optimum-Logistics.com is partnering with ChemConnect.com

*Source: www.ChemConnect.com*
Expertise and Market Intelligence

- **Procurement expertise** is built into tools for cost calculation.
  - **Example:** An online bond market, Axess.com provides analytic and advanced modeling capabilities to help fixed income securities investors trade their portfolios.

- **Market intelligence** is derived from integrated data of sales and transactions.
  - **Example:** MuniCenter.com, another bond e-market, acts as an information portal for fixed income securities investors, too.
Market Axess To Acquire trading edge, inc.

- To Add Anonymous Trading to Market Transforming Fixed-Income Platform
- 500 Institutional Investor Users, 40,000 Research Reports and More Than $10 Billion in Inventory

Market Axess, a leading Internet-based multi-dealer research and trading platform for credit products, today announced that it will acquire Trading Edge, Inc., which owns BondLink, the premier technology for anonymous trading of fixed-income products. [details].

Market Axess offers one-stop shopping for new issues, trading, and research in global credit products. We deliver the trading capabilities and insight of eight leading global securities dealers: ABN AMRO, BANC OF AMERICA SECURITIES, BEAR STEARNS, CREDIT SUISSE FIRST BOSTON, DEUTSCHE BANK, J.P. MORGAN CHASE & CO., LEHMAN BROTHERS, and UBS WARBURG. Through a secure web connection, we offer institutional clients the ability to customize views of dealer new issues, inventory, and research. Clients may negotiate and trade online with our dealer partners through a single location and in a consistent format, affording straight through processing.
Market intelligence
Online Business Process Support: Streamline Workflow

- **Workflow management:** In document or information-intensive industries, business models are built to streamline business processes.

- **ChannelPoint** “streamline[s] and automate[s] the insurance distribution process”
E-Markets Function As Adapters

- E-markets connect buyers and sellers; form networks of participating firms.
- **Network externalities** – the value of an online market increases as more firms join it, attracting further more participants.
- **Compatibility** between different technologies promotes network adoption.
- **Adapters** set up interfaces between different technologies to enable at least partial compatibility.
IV. Firm Strategy in the Market
What You Can Do …

- **Face it:** You may not be able to do it all on your own, if you haven’t been early to market for e-business opportunities

- **Partner for:**
  - Content
  - Access
  - Application development
  - License technology you need
  - Continuously innovate
Partner for Content

- Figure out a way to partner with an “aggregator” for selling products and services in your industry: don’t let others do it first!

- Competitive advantage sources:
  - You can customize and brand the content
  - You can retain control over your customers’ transactions
Partnering for content at Microsoft Expedia: providing links to vacation booking engines

Check out our great new site, now with even more fabulous vacation packages and hot specials at amazing prices! You'll find the best deals on quality air/hotel vacations to exciting destinations like Orlando, Hawaii, Mexico, Las Vegas, the Caribbean and Europe. Wherever you want to go Vacation Outlet can get you there for less!

Vacation Packages

FEATURING

Vacation Outlet
The Best Vacations at the Best Prices!

TravelRes Direct
Book vacations and cruises online! Vegas from $83 per night. 3 night Bahamas from $174.

Continental Airlines Vacations
Cool Vacations is the online vacation package expert for your travel needs.

go-today.com

Partner for Access

- Work with an electronic intermediary that provides services for other agents involved in e-commerce
  - B2B portal providers
- Competitive advantage sources:
  - You can try to partner with a leading B2B portal provider with whom you or the intermediary has an exclusivity agreement
Partnering for access:
eBay sponsors the ads
of AutoTrader.com
Partner for Application Development

- Aggressively establish alliances with established e-commerce industry participants

- Sources of competitive advantage:
  - Gather the right combination of assets (technological and industry-specific expertise) in a way that is otherwise not possible
Amex Travel Related Services’ Recent Partnerships

- **Microsoft**, for online travel booking
- **Portable**, for expense mgmt
License Technology

- Find a competent provider from which to buy the “right” technology
- Share in the profits result from transactions that are referred to you by other web sites
- Sources of competitive advantage:
  - The technology is complex enough such that it cannot be copied easily
  - No industry standards are established yet
Technology Licensing at ITN.Com

ITN Partner

Put The World’s Most Widely Used Travel Booking System To Work On Your Web Site.

For companies that want to offer online travel booking services on their Web sites and let ITN provide turnkey ticket fulfillment, the ITN Partner Site Program is the ideal solution.

Adding travel reservation capabilities to your Web site is a great way to attract more visitors and new business - and gives customers a good reason to return to your site more often. It can also be a source of incremental revenue generated from travel purchases and advertising placed on your ITN Partner Site booking pages.

Whether they’re business travelers who need to get to their next meeting, or people just shopping for a great vacation, visitors to your ITN Partner Site will have access to more than 500 airlines, 50 car rental companies, and 33,000 hotels. ITN handles worldwide ticketing and fulfillment with full service available 24 hours a day, 7 days a week.

Note: ITN.com is now known as GetThere.com

ITN Products

ITN Global Manager™
Used by corporations for employee travel.

FlightRez™
The booking engine that lets airlines serve travelers directly.

ITN Partner
Used by third-party public Web sites to provide travel services.
Acknowledgements

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