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EFT and EDI: 101
The Basics

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Outline

• What’s wrong with paper?
  – What is Electronic Commerce anyway?
  – How does EDI work?
  – How does it benefit business?

• What’s wrong with checks?
  – What is FEDI and how is it superior to paper and “normal” EFT?
  – How are firms using FEDI?
Where’s the Cash?

Liquidity

Cash Inflows

FIRM

Cash Outflows

Back-up Liquidity
Cash Flow Timeline

- Pre-order Information
- Order Information
- Invoicing/Shipping Information
- Payment Information

Goods/services Provided by seller
Cash value received by seller
Objectives of the Firm

• Reduce Inflow Timeline
• Expand Outflow Timeline
• Reduce Idle Balances
• Reduce Transaction Costs
• Maintain/improve Supplier and Customer Relationships
• Reduce Errors
• Improve Certainty
• Better Management Information
Old Paradigm: Paper Processing
The Paper Paradigm

- Information is Exchanged on Paper
- Computers Help Us Generate Paper Faster
- Focus of Cash Management: Take Advantage of Paper
  - Lockboxes
  - Remote disbursing
  - Optical scanning
  - Fed Express
- Expand Business -- Expand People Handling Paper
- Linear Processing
Transactions in the Paper Paradigm

Seller

Request for Quote
Mail
Quote
Mail
Purchase Order
Mail
Invoice
Mail
Bill of Lading
Mail
Check and Remittance Advice
Mail
Check

Carrier

Buyer

Banking System
Keying in the Paper Paradigm

Seller’s Computer System

Keying

Postal System

Buyer’s Computer System

Keying

Keying
What’s Wrong with the Paper Paradigm?

• Labor intensive
• Slow
• Error prone
• Uncertain
• Excessive inventory (and cash)
• Bottom Line: IT’S EXPENSIVE
What Can We Do?

- Option 1: Make paper work even harder
- Option 2: Replace the paper paradigm
The Paperless Paradigm

• Paper is not needed to store/transfer information
• Information resides in data files on both sides of a transaction
• Computers can be networked to exchange this information
• Let computers do processing
• Let people make decisions
• Computers can get information to where it is needed by decision makers
Definitions of e-Commerce

Simple: “The selling of products and services using the Internet.”

More General: The use of computer and communication technology to facilitate the information exchange between two parties in a commercial transaction.
Electronic Commerce

The use of computer and communication technology to facilitate the information exchange between two parties in a commercial transaction.

- Intent is to automate
- Often an intermediate entity involved
  - Bank
  - Transportation agent
  - Government agency
  - VAN (value added network)
Types of Electronic Commerce

• Paperless:
  – Application to application
    • Electronic data interchange (EDI)
    • Financial EDI (firm to bank)
    • File transfer
  – Manual to application
    • Web applications
    • Electronic order entry
    • E-mail
    • Financial service delivery (e.g., E-Trade)
Types of Electronic Commerce-cont.

• Physical media assisted by computers:
  – Facsimile transmission
  – MICR, OCR, ICR
  – Bar coding
  – RF
Types of Electronic Commerce

EDI, FEDI, FTP

Internet, E-mail, E-trade

MICR, OCR, ICR, Bar Coding

FAX

Traditional Paper Transactions
For Business Transactions: EDI

EDI is the use of computers and telecommunications to exchange business data between computers in a structured format that does not require manual intervention.
What EDI Is and Isn’t

Highly Unstructured

Facsimile Transmission

Electronic Messaging

Electronic Mail

EDI

Highly Structured
Transaction with the Paperless Paradigm

Seller

Request for Quote
Quote
Purchase Order
Invoice
Bill of Lading
Goods
Payment and Remittance Advice

Carrier

Banking System

Buyer
Keying in a Paperless Paradigm

Seller’s Computer System

Value Added Network

Buyer’s Computer System
Benefits of the Paperless Paradigm

- Lower personnel costs
- Reduced error rates
- Faster cycle time
- Improved customer service
- Reduced inventory
- Fewer stock-outs
- Reduced paper handling costs
- Faster payments
- Better control over information
How fast is EDI growing?

The chart shows the growth of EDI use from 1988 to 1998. The use of EDI has increased significantly over the years, with a notable increase from 1995 to 1996.
Online Households

Million

From *Net Profit* by Peter S. Cohan
Web Ad Revenues

$ Million

From *Net Profit* by Peter S. Cohan
Business Through the Web

Est. from the U.S. Department of Commerce

$ Billion

Why EDI now?

- Labor costs
- Paper costs
  VS.
- Computer costs
- Telecommunication costs

Competitive pressures
Time Required to Transmit the 32 Volume New Encyclopedia Britannica

- 1200 bps modem ........................................ 28 days
- 9600 bps modem ....................................... 3.5 days
- 28.8 Kb modem ......................................... 28 hours
- Basic Rate ISDN ....................................... 6.3 hours
- T-1 line .................................................... 31 minutes
- T-3 line .................................................... 1 minute
- ATM-SONET (OC-3) ................................. 17 seconds
- ATM-SONET (OC-12) ............................... 4.7 seconds
- Newly proposed technology ....................... .005 second
Consequences

- Costs
- Time
- Paper Paradigm
- Paperless Paradigm
Three Pillars of EDI

- Generic Format Standards
- Value Added Networks
- Translation Software

Micro Computers
I. Generic Format Standards

- American National Standards Institute
  - About 400 documents standardized
  - Many industries represented
  - Many financial transactions
- EDIFACT to eventually become world-wide EDI standard
Sample of ANSI X12 Transactions Related to Payments

- 810 Invoice
- 811 Consolidated Service Invoice (Telephone bill)
- 812 Credit/Debit Adjustment
- 813 Electronic Filing of Tax Return Data
- 820 Payment Order/Remittance Advice
- 821 Financial Information Reporting
- 822 Customer Account Analysis
- 823 Lockbox
- 824 Application Advice
- 826 Tax Information Reporting
- 827 Tax Return Notice
- 828 Debit Authorization
- 829 Payment Cancellation Request
II. Value Added Networks

- Overcome communication barriers
- Cost per EDI document now $.25
- Available to virtually all users
Value Added Networks

- Commercial VANs
  - IBM (Advantis)
  - GEIS
  - AT&T
  - MCI Telecommunications
  - Ordernet
  - Kleinschmidt

- Internet
III. Translation Software

- Unique data format to standard (and back)
- Off-the-shelf
- Low cost ($300 and up)
- Seventy firms produce it
Three Stages of Web Involvement

• Stage 1: “Brochure”
  – One-way information broadcast
  – Lowest cost, easiest to maintain
  – A holder for your place in e-commerce

• Stage 2: “Basic Transactions”
  – Offer basic transactions: orders, payment
  – Requires significant maintenance, real-time processing
  – May compete with existing business avenues
Three Stages of Web Involvement

• Stage 3: “Complete Business Partnership”
  – Multiple transactions with customers
  – Integrated functionality
  – Builds customer loyalty, long-term relationships
  – Involves major funding commitments
Three Stages of Web Involvement

Stage 1
- LandsEnd: Catalog
- Orders

Stage 2
- Cisco: Product Info.
- Orders
- Customer service
- Payment

Stage 3
- WSJ: News
- Design
- Status
- Delivery
Any Problems with Paper Checks?
Problems

- Slow
- Labor intensive
- Error prone
- Uncertain
- Informationally deficient
- Excess balances
- Expensive
What is Financial EDI?

FEDI is the use of computers and telecommunications to exchange business data between a bank and its customers in a structured format that does not require manual intervention.
What kind of data is transmitted?

- Payment orders
- Remittance detail
- Account analysis
- Lockbox receipts
- Paid check detail
- Letter of credit information
- Stop payment
Why is FEDI better than paper?

- Automated processing
- Control of payment timing
- Fraud control
- Cost effective ($2.00 vs. $0.50)
- Reconciliation
- Electronic account application
- Lower error rates
- Acknowledgments
TYPES OF EFT SYSTEMS IN NORTH AMERICA

- Real time systems
  - FedWire
  - CHIPS
  - SWIFT
- Batch systems
  - Automated Clearing House (ACH)
  - Canadian EDI System
Why is FEDI superior to conventional EFT?

- Remittance information goes with payment
- Electronic acknowledgments
- Less manual processing
- Completes EDI cycle
FEDI Payments 1:

Payor → Payor’s Bank → Payee

820
FEDI Payments 2:

Payor

820

Payor’s Bank

Payee

820

Payee’s Bank

CTX
What is a CTX?

• Most ACH transactions are one record:
  – 94 characters
  – check-like information
  – PPD, CCD, CIE, etc.
• Enter CTP (CCD + up to 4,990 addenda)
• Finally CTX (CCD + addenda that can be converted into an 820)
CTX’s and 820’s

820

Reformatting

CTX

Send through ACH System

CTX

Reformatting

820
FEDI Payments 3:

- Payor
  - Payor’s Bank
  - 820
- Payee
  - Payee’s Bank
  - 820
  - CCD
  - Dep. Report
FEDI Payments 4: EDI-Enabled Outsourcing of Payables

Customer

Value Added Bank (VAB)

Supplier 1

Supplier 2

Supplier 3

Etc.

820’s

Check

ACH

820
FEDI Payments 5: (Debit)

1. 810
2. 820
3. ACH Instructions
4. CCD (Debit)
5. Remittance Info
Barriers to EDI

- Lack of trading partners
- Initial investment
- Inertia in current systems, processes
- People
- Security
- Float issues
CONCLUSIONS

• Prepare your firm for the trends
  – EDI and other EC
  – Internet
  – Home computers (now 50%)
• Be prepared for customer demand
  – Slow but building speed
  – EDI will be required in many relationships
• The infrastructure is well in place
• You will be doing EDI/FEDI sooner or later
  -- might as well plunge in now!