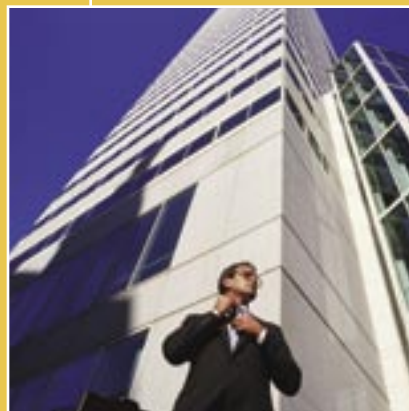


# The Value Chain: Adding Value to the Supply Chain



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# The Value Chain: Adding Value to the Supply Chain

In today's marketplace, companies no longer compete one-on-one; their supply chains do.

As a contractor providing HVAC, plumbing, and other mechanical services, you strive to make your business more successful. You continuously examine ways to improve your business processes, both at the jobsite and the office, but have you thought about how increasing value and reducing waste in your supply chain could affect your bottom line?

When all participants in a supply chain strive to provide value to their direct and indirect customers, while removing waste from their processes, that supply chain becomes a value chain.

## **Keys to Making Your Business More Successful**

By streamlining work processes, developing stronger relationships with suppliers, and using technology, you can significantly increase your company's profitability.

This report highlights key concepts in supply chain management that will help you transform your supply chain into a value chain. Read on to discover the opportunities and the challenges that emerge when you improve and integrate the business processes of contractors, suppliers, and manufacturers.

# 1

## The Contractor Supply Chain

In this chapter you will:

1. See that your business operates in a supply chain.
2. Learn that businesses no longer compete one- on-one; supply chains do.

Your company's performance depends on the companies that supply you, as well as the companies that buy products and services from you. Everyone is linked and the performance of one affects all.

### Your Supply Chain

Companies that buy and sell products and services from one another make up a *supply chain*. They are linked through their transfer of information, materials, and funds. Construction companies are a key link in their supply chains, being both buyers and sellers.

A supply chain in the construction industry includes all parties involved in designing, building, and delivering services to a project.

Although the construction supply chain also includes those who provide services, such as insurance companies, financiers, and labor unions, this report focuses on services provided by manufacturers, suppliers, and contractors to the owner community.

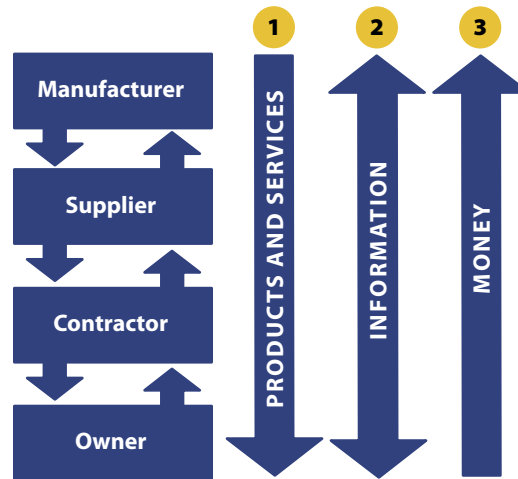
### A Construction Supply Model



## Flow of Resources in a Supply Chain

The chart to the right shows that:

- 1 Products and services flow down the supply chain and along the distribution channel;
- 2 Information flows both up and down the supply chain; and,
- 3 Money flows up the supply chain.



Collaboration among companies to best satisfy customer needs and reward all members of the supply chain<sup>1</sup> is known as *supply chain management* (SCM).

While SCM may be practiced on a single project, its greatest benefits come when it:

- Is practiced across all projects in a company
- Involves multiple companies
- Is applied consistently over time

Today, SCM is a leading process-improvement, cost-saving, and revenue-enhancing business strategy. Companies not engaging in SCM may find themselves falling rapidly behind their supply-chain conscious competitors.

**Remember:** *Companies no longer compete one-on-one; their supply chains do. To compete successfully, all members of your supply chain must add value to the supply chain, thus creating a “value chain.”*

<sup>1</sup> Iris D. Tommelein, Kenneth D. Walsh, and James C. Hershauer. *Improving Capital Projects Supply Chain Performance* (Research Report PT172–11, Construction Industry Institute, 2003), 241 pp.

# CONTRACTOR ACTION ITEMS

**1** Name the suppliers in your supply chain.

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**2** Which of these companies do you prefer to work with?

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**3** Of the companies you prefer to work with, which help you reduce costs and improve efficiencies?

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# 2

## Supply Chain to Value Chain

A product or service is of *value* to a customer when it provides what the customer wants, expects, and appreciates. Owners assess value in different ways, depending on the type of business they are in. To be a value provider, you must understand the business of each of your customers so you can tailor your products and services to meet their needs.

*A supply chain becomes a value chain when all participants put exceptional care and effort into providing value to their direct and indirect customers and into removing waste from the project delivery system.*

In the end, the value delivered in a value chain is reflected in the profitability of all value chain participants.

Another way of stating this is that value is “what you get” versus “what it costs.” The chart below offers an example.

### Value is “What you Get” vs. “What it Costs”

#### What you get:

- Product or service of a desired quality
- Reliability of processes (e.g., on-time delivery)
- A product or service that meets your needs

#### What it costs:

- Purchase price of components and services
- Lead time for
  - Delivery
  - Payment
- Indirect cost (such as transaction costs for purchasing and installation)
- Service requirements for operation, maintenance, and commissioning



In this chapter you will:

1. Define value for different customers.
2. Recognize the difference between price and cost.
3. Assess how your company delivers value.

## What are Some Ways to Measure Value?

Use this value statement checklist to evaluate members of your supply chain.

MEASURES OF VALUE	DOES THAT:		
	Always	Sometimes	Never
Supply chain member: _____			
1. Delivers quality product, on time, and within budget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Conducts business in a professional and ethical manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Plans ahead.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Executes according to plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Meets contractual obligations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Is very accessible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Charges a fair price for products and services delivered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Provides accurate and timely bid estimates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Prepares timely submittals and drawings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Provides solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Knows where to procure specified materials and source hard-to-find products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Practices value engineering.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Focuses on best practices and continuous improvements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Always coordinates work with other contractors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Provides opportunities for education and training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Stands behind the products they sell and the services they deliver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Looks for opportunities to use technology to improve the value proposition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Actively supports relevant trade associations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Provides and accepts constructive feedback on business processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Does take-offs and cost estimates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Provides constructability feedback.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Provides design-assist services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Educates owners on total cost of ownership.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# CONTRACTOR ACTION ITEMS

**1** List ways in which your company currently adds value in your supply chain.

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**2** Naming your company as the “supply chain member” in the value statement checklist, collect the noted information from your suppliers, project managers, and procurement staff and use it to assess the value your company delivers.

**3** In which areas can you improve or add greater value to your supply chain? How?

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# 3

## Reliability and Performance: Critical Components of Value

In this chapter you will:

1. Learn how reliability and performance impact profitability.
2. Learn some of the benefits of value chain initiatives.

Increasing reliability and performance are critical to adding value to supply chain management, and to creating a true value chain. *Reliability* is your ability to plan, execute, and accomplish that to which you have committed. For example, you plan and schedule work to make sure everything will be on hand when needed<sup>2</sup>. Low reliability results in low performance.

High reliability among all value chain members generally yields the following contractor benefits:

- Decreased inventories
- Reduced labor costs
- Improved cash flow
- Reduced financing costs
- Improved lead times
- Shortened construction schedule
- Improved project profitability
- Better reputation

### How does reliability impact performance and profits?

Look at the example on the opposite page, of a supplier's delivery schedule and a contractor's work plan.





The example shows that the ideal scenario is 100 percent reliability from both contractor and supplier. What metrics can we use to evaluate supplier reliability and performance?

2 Industry data suggests that in the course of a week, crews can complete only 40% or so of the activities their foreman had assigned the week prior. Also see Glenn Ballard et al. (2002), Lauri Koskela et al. (2002), and specifically Glenn Ballard and Gregory A. Howell (2002).

## Evaluating Supplier Reliability and Performance

Member companies of the American Supply Association<sup>3</sup> (ASA) continue to work on initiatives to reduce supply chain costs. Their assessment of manufacturer and wholesaler performance focuses on five key areas, shown below, along with the criteria to consider in each of these areas.

### Metrics to Evaluate your Suppliers

#### ■ Order Management

- Fill rate/product availability
- Shipping accuracy
- Shipping timeliness/lead times
- Invoice accuracy
- Problem resolution

#### ■ Electronic Commerce

- Electronic Data Interchange (EDI)(i.e., the use of standardized computer codes)
- Barcodes
- Standard numbering system (i.e. UPC)
- Digital relational database for product sheets (pricing, check orders)

#### ■ Inventory Management

- Notice of obsolescence
- Notice of price change
- Stock balancing returns (saleable product)
- Vendor managed inventory
- Communication of inventory optimization schemes

#### ■ Logistics Management

- Product return rates due to shipping damage
- Cycle time for delivery
- Proof of delivery
- Communicating logistics cost reduction schemes

#### ■ Sales/support Productivity

- Pre-sales support
- Post-sales support
- Marketing support
- Business support

Find out which of your suppliers are improving their performance in the above areas. Those are the suppliers you want to team with as you establish your value chain.

<sup>3</sup> High-performance Partnering (ASA, 2002).

## Sample Supplier Performance Evaluation

Following are some examples of performance measures using the ASA Supplier Evaluation Metrics.

**1 Fill Rate/Product Availability:** industry goal of suppliers is 98 percent of line items filled on the first pass, and no more than two shipments to complete an order.

**What reliable performance means for the contractor:**

- Fewer delays due to backorders
- Less paperwork to receive orders
- Easier to reconcile purchase orders with delivery slips and invoices

**2 Shipping Accuracy:** industry goal is 100 percent accuracy of every order.

**What reliable performance means for the contractor:**

- No need for detailed checking of each and every order received

**3 Shipping Timeliness/Lead Time:** industry goal is 100 percent compliance with agreed-upon lead times.

**What reliable performance means for the contractor:**

- Improved work schedules
- No need for expediting

**4 Invoice Accuracy:** industry goal is 100 percent compliance with agreed-upon price.

**What reliable performance means for the contractor:**

- Accounting personnel spend less time verifying quotes and other pricing agreements

As you can see, a number of components should be considered when evaluating your suppliers. Another of these components, cost, is discussed in Chapter 4.

# CONTRACTOR ACTION ITEMS

**1** Using the list of your suppliers you created at the end of chapter 1, identify how each supplier provides value to you.

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**2** List specific actions you would take to transform your supply chain into a value chain.

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**3** List potential benefits from, and challenges to, implementing the value chain initiatives you have identified.

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# 4

## Measured Cost by Activity

There are a number of ways of looking at cost. In our industry, the most commonly used measures of cost are purchase price, total installed cost, and total cost of ownership.

**Purchase Price** is the amount your supplier invoices you; it includes the price of the product or service you bought, and it can include the price for shipping, handling, and taxes.

**Total Installed Cost (TIC)** is the purchase price plus the amount of money you spend to obtain a product, receive it, handle it one or more times, store it, install it, and then commission it prior to turnover of the facility to the owner. In addition, TIC might include handling costs above and beyond those included in the purchase price. Installed product is typically what the contractor gets paid for. *As a result, many contractor value chain initiatives aim at reducing the total installed cost.*

**Total Cost of Ownership (TCO)** is the amount of money an owner spends to obtain a product, get it installed, and operate and maintain it for the duration of ownership.

One of your true areas of cost is dealing with your suppliers. No doubt you have some suppliers who are easier to work with than others. But which suppliers really provide you the best services to meet your company's needs?

### Calculate the True Cost of Dealing with Suppliers

The true cost of working with a supplier is invoice cost plus the transactional costs of doing business. Many of these costs are buried in overhead, and the activities associated with these costs affect your productivity and profitability.

What value are you getting in return for those costs? How does the value you get impact your ability, in turn, to provide value to your customers, and to do so more effectively than your competitors can?

How *should* you measure the true cost of doing business with a supplier? Just remember "MCA" or "measured cost by activity."

In this chapter you will:

1. Learn to calculate measured cost by activity (MCA).
2. Identify improvement opportunities based on MCA.
3. Discover how to become a preferred customer.



**Measured Cost by Activity<sup>4</sup> (MCA)** is a method for calculating the cost of a task, product, or service. It differs from traditional cost accounting in that it identifies and specifies selected overhead costs<sup>5</sup> and ties them back to specific activities. This allows you to identify inefficiencies and waste.

Essentially, MCA treats the indirect costs associated with a specified activity much like a contractor tracks and accumulates the costs of a construction project. MCA more accurately represents the cost of the activities.

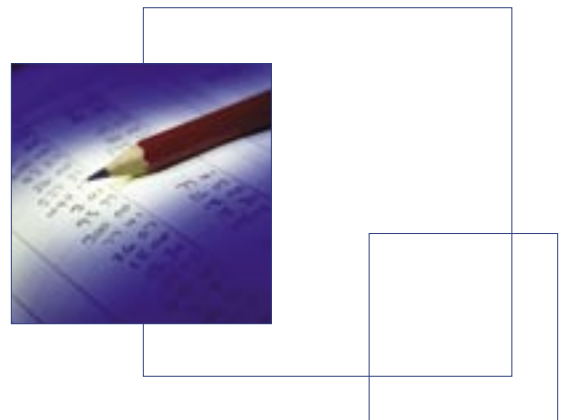
Indirect costs often get apportioned as a percentage of a project's total contract volume, total labor hours, or materials procured. These assumptions are simple, but seldom correct. MCA helps you differentiate suppliers who disproportionately impact overhead resources.

### How to Calculate MCA

1. Identify the transaction (for example, purchasing a product).
2. Identify the related activities. For our example of purchasing a product, the activities include:
  - Contact suppliers to get product information
  - Get price quotes
  - Evaluate price quotes and select the optimal supplier
  - Prepare and submit purchase order
  - Coordinate and track delivery
  - Receive material and verify order accuracy
  - Reconcile invoice with purchase order and price quote
3. Determine the unit cost for performing each activity. In our example, the unit cost would be based on the average hours your project staff expends processing a purchase order, times the average hourly pay of the person who would do that job.
4. Track the number of times each activity is performed for each supplier. This gives you the MCA of doing business with that supplier.

<sup>4</sup> See for example G. Cokins, *Activity-based Cost Management Making it Work: A Manager's Guide to Implementing and Sustaining an Effective ABC System* (Irwin Professional Pub., 1996). For the purposes of this paper, the concept of "Activity Based Costing (ABC)" is termed "Measured Cost by Activity (MCA)."

<sup>5</sup> "Overhead cost" is the same as "indirect cost".



## How to Use MCA to Evaluate Suppliers

This example shows MCAs for two suppliers. Supplier 1 requires more time and effort than Supplier 2. Up-front investment is required to develop a relationship with Supplier 2, but this pays off because it reduces your true cost.

SUPPLIER 1	MCA	SUPPLIER 2	MCA
1. It takes 3 or 4 calls to get the product information you need.	\$\$\$	1. You get all the product information you need in one phone call.	\$
2. Every project is quoted a different price.	\$\$	2. You have extended price agreements in place.	\$
3. You obtain quotes from multiple suppliers.	\$\$\$	3. You have identified your preferred suppliers and developed a relationship with them.	\$\$\$\$
4. Frequent follow up and expediting required for PO fulfillment.	\$\$	4. No follow up and no expediting is required.	\$
5. Orders are seldom complete. Supplier chronically backorders.	\$\$\$\$	5. On time delivery and high fill rate accuracy.	---
6. Price quotes and invoice inconsistency require expensive reconciliation.	\$\$\$\$	6. Invoices consistently reflect quoted prices.	\$
<b>Overall MCA</b>	<b>\$\$\$</b>	<b>Overall MCA</b>	<b>\$</b>

$$\text{True Cost} = \text{Unit Price} + \text{MCA}$$

MCA will help you determine your preferred suppliers. Your suppliers, in turn, may use this method to evaluate you to determine whether you're a preferred customer. This is discussed in Chapter 5.

# CONTRACTOR ACTION ITEMS

**1** Identify and list key activities that are included in company overhead and that affect your bottom line (e.g., effort spent on purchasing, estimating, warehousing, and materials handling).

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**2** Determine unit costs for each of the above activities.

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**3** Use MCA to calculate and compare the costs for dealing with different suppliers.

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# 5

In this chapter you will:

1. Learn how contractors and preferred suppliers can set up win-win relationships.
2. Identify some of the supplier value added services.

## Preferred Customers and Suppliers

Not all customers are equal. Some require more services than others. For example, some contractors routinely over-order and return material, affecting supplier profitability. Suppliers can use Measured Cost by Activity (MCA) to evaluate the cost to serve specific contractors. Based on this information, they establish customer-specific price discounts and service offerings.

### How to Become a Preferred Customer

Are you asking for competitive bids from multiple suppliers every time you buy something? If so, you may be saving money in terms of what you pay the supplier, but you also may be spending too much time and effort on this activity and adding cost to the procurement process. Your suppliers may not be telling you whether you are a good or bad customer, but their prices and available services will reflect it. Contractors who do not develop strong supplier relationships are adding cost to their businesses.

### What do suppliers want from contractors?

- Prompt payment
- A significant portion of the contractor's business
- To be evaluated on their total product and service offerings
- Advance notice of product needs and delivery requirements
- Clear statement of service expectations
- Timely and effective communication
- Opportunities to develop long-term agreements
- No unjustified back charges
- Willingness to use technology and develop e-commerce

**Meeting these criteria will help you develop a win-win relationship with your suppliers.**

### How to Identify Preferred Suppliers

Consider setting up relationships with a preferred and an alternate supplier. Through these relationships you can develop mutually-beneficial business processes and improve the profitability of your supply chain.



For example, you may be able to bargain for better prices and obtain special treatment once you develop a business relationship with a preferred supplier. As the volume of business you do with a supplier increases, your company leverages its bargaining power with this supply chain partner. In the long run, as your partner, the preferred supplier can reduce your procurement costs by offering price discounts, personalized treatment, and advice on products that suit your business. Both parties are now adding value to their supply chain, or creating a value chain.

### **What to Look For when Choosing a Preferred Supplier<sup>6</sup>**

- Invoices are easy to read and understand
- Deliveries are on time and complete
- 24/7/365 emergency service
- Availability of price books to integrate with project estimation software
- Salespeople are readily available
- Breadth and depth of product
- Carry specific preferred brand products
- Salespeople are knowledgeable about products and services
- Catalogs and specifications are readily available on the web 24/7/365
- Orders can be placed via secure website
- Price protection for extended period of time
- Supplier offers value added services (NOTE: if other suppliers provide equal services, the services cannot be considered value added.)

### **Examples of value added services:**

- Vendor/supplier managed inventory (VMI)
- Historical data retrieval
- Pipe fabrication and end preparation
- Valve control and actuation
- Onsite resources
- Product education and training
- System design support
- E-business technology

Once you've established relationships, you are ready to develop a win-win relationship with your suppliers. One of the primary benefits in doing so is the ability to set up an integrated supply chain. This is one of the most significant ways for both preferred customers and suppliers to remove waste from their value chain.

<sup>6</sup> Also see Jim Olsztynski, *Essentials of Profitable PHCP Distribution* (ASA Education Foundation, 2003).

# CONTRACTOR ACTION ITEMS

**1** Use the chart below to determine what kind of relationship you have with your current suppliers. Make check marks on the phrases that apply.

ADVERSARIAL	PARTNERING
You spend a lot of time and effort on each transaction to squeeze your supplier for every last bit of discount on product purchases.	You value the total cost for products and services combined.
You have no idea as to how your values compare with those of your supplier.	Your companies' values are in line with each other.
Supplier: _____	

**2** Using the MCA process you learned in Chapter 4, calculate how much waste there is every time you ask for competitive bids from multiple suppliers. Do the savings justify the additional costs?

**3** List value added services you would like to see offered in your supply chain.

**4** Meet with select suppliers and describe your business. Find out what they value in customers, and discuss MCA from their perspective. Determine what products and services they can offer, and assess how you can take advantage of these. Then use that understanding to develop a win-win relationship.

# 6

In this chapter you will:

1. Learn what integrated supply is.
2. Learn what the features and benefits of integrated supply are.
3. Learn to assess whether integrated supply is a solution for your business.

## Integrated Supply

Does procurement of certain materials represent neither a great risk, nor a great opportunity in your company? Then why bother doing it? Find a partner—an integrated supplier who is better at procurement than you are—and you may develop a win-win situation.

### What is Integrated Supply?

Integrated supply has been used for more than 20 years by owners for supply of materials for maintenance, repair, and operations (MRO). Integrated supply can support contractors on projects or in service work for supply of commodities.

*Integrated supply<sup>7</sup> means that your supplier is responsible for managing and replenishing your inventory of materials.* This practice is more appropriately used for commodity materials than for custom, project specific materials. Integrated supply also works well for managing small tools, equipment, and safety supplies.

Using integrated supply, you no longer worry about buying materials, paying for them upon delivery, and then storing them in your warehouse or at a project site until you need them. Your integrated supplier does all that for you, so that your craftsmen get what they need, when they need it, and you pay only for what gets used.

Integrated supply is offered by suppliers who can see upstream in their supply chain and know the inventories of their own suppliers, as well as the capacity and production rates of manufacturers. By working closely with you and understanding your needs, they can get products from upstream as needed and make them available on very short notice. This way, they don't have to carry a significant amount of inventory themselves, allowing them to lower the prices they charge you.

## Features and Benefits of Integrated Supply

With integrated supply, the supplier offers you many valuable services:

- Handles procurement for you
- Delivers, just-in-time, to your chosen location (warehouse, project site, etc.)
- Sets up and maintains inventory at your chosen site
- Staffs your site, if requested
- Replenishes inventory as needed to meet your project needs
- Invoices only for products issued
- Takes back excess materials when a job is done
- Bills according to pre-agreed volume pricing
- Provides management information on material purchases and consumption

Some direct contractor benefits of integrated supply are:

- Immediate onsite availability of products without the overhead
- High levels of availability
- Reduction in waste, theft, and other shrinkage
- Reduction in administrative costs for procurement and materials management tasks

Now that we have discussed and demonstrated the features and benefits of integrated supply, what is a key tool to implement this process? The answer is: e-commerce. This topic is covered in Chapter 7.



7 "Integrated supply" is used here interchangeably with "vendor managed inventory" (VMI) in the context of contractor-supplier relationships. To manufacturers and wholesalers/distributors, VMI could involve the use of electronic data interchange (EDI) so that the manufacturer can maintain a 'virtual warehouse' of every SKU number stocked by the VMI-enabled customer. While the use of EDI greatly enhances the communication capabilities between all parties involved, its deployment is not essential for the implementation of integrated supply. The use of integrated supply in the remainder of this document should help to avoid confusion.

# CONTRACTOR ACTION ITEMS

To assess whether integrated supply can help you manage certain materials, rate your situation on the scale from 0 to 5, with 0 representing least value in your situation and 5 representing the most. **Consistent ratings of 3, 4, or 5 indicate you should investigate implementing integrated supply.**

Circle the number that applies to you:

Material Characteristics							
Materials are uniquely engineered for the project	0	1	2	3	4	5	The materials you need are commodities
Material is readily available at the same price anywhere	0	1	2	3	4	5	You pay a premium when buying these materials in small quantities over the counter

Contractor Needs							
You have a one-time need for this material	0	1	2	3	4	5	You will need many units of this material at different times
You will use this material only on this job	0	1	2	3	4	5	You can standardize on this material and use it on several jobs
You can do an exact quantity take off	0	1	2	3	4	5	It is hard to estimate exact quantities needed and you expect to end up with excess materials when a job is done

# E-commerce

Companies using and marketing e-commerce tools have competitive advantages because they are able to communicate more effectively with their clients and suppliers.

Use of e-commerce prepares your company for increased collaboration and planning with value chain members. In short, *e-commerce can help you make money.*

## What is E-commerce?

**E-commerce** refers to transactions between a buyer and a seller, over a computer network, which involve the transfer of ownership or rights to use goods or services.

It further involves the exchange of product data and information, but the actual storage, shipping, and handling of products remains the task of logistics providers such as distributors and shipping agents.

**Electronic Data Interchange (EDI)** refers to standard computer codes that are adopted industry-wide to transmit e-commerce instructions between buyers and sellers. The use of EDI, while not mandatory for e-commerce, significantly enhances its efficiency.

Some other key facts about e-commerce:

- Transactions occur within selected e-business processes, such as purchasing, selling, vendor-managed inventory, or online training.
- Electronic agreement, not payment, is what distinguishes an e-commerce transaction.
- Unpriced transactions, such as downloading free information on the Internet, are not, strictly speaking, e-commerce, but they help to promote and conduct e-commerce.

Examples of e-commerce transactions include:

- A contractor buying parts from a supplier using e-mail communication
- An electronic marketplace for businesses to sell parts to other businesses on the Internet
- A manufacturing plant selling components to another plant using the firm's Intranet
- A manufacturer selling parts to a wholesale distributor using an EDI network

In this chapter you will:

1. Learn what e-commerce is.
2. Discover the benefits and costs of using e-commerce.
3. Determine what you should do to capitalize on the benefits of e-commerce.

## What is the Status of E-Commerce?

Though e-commerce is not growing as quickly as originally envisioned, contractors, wholesalers, and suppliers are working vigorously on their internal systems to capture and provide the data needed to establish e-commerce.

Some key facts about the development status of e-commerce technologies:

- Different technologies are being developed for different markets
- It is unlikely that there will ever be a one-size-fits-all technology
- Hardware technology is progressing very quickly, though the market success of specific technologies is hard to predict
- Development of an industry-wide standard naming for products has proven difficult
- New software deployment and usage is lagging
- Current EDI technology is expensive; many e-commerce transactions are done without it
- Contractors are generally taking a wait-and-see approach

This notwithstanding, e-commerce is alive and well. E-commerce technologies are becoming increasingly important tools to enhance the value chain. Software tools you already use for estimating, procurement/materials management, accounting, and even some common office productivity packages like Microsoft® Office, have incorporated e-commerce components. These enable business transactions between your office and the other members of your value chain.

E-commerce is an increasingly important method for ensuring speed, accuracy, and reliability in business transactions among value chain partners. Your suppliers are looking to you to utilize and improve your e-commerce capabilities as a means of driving waste and cost out of the value chain. Furthermore, you will be increasingly viewed as a preferred customer in proportion to your e-commerce capabilities and activities, or your willingness to move to e-commerce.

### **The screen captures on page 25 show examples of current e-commerce applications.**

A number of estimating software packages can provide multiple identities (*UPC Code, Vendor Code, and Buyers Code, along with the identification of the source of the material*) to facilitate the movement of material through the value chain.

Summary - Mechanical

Job: 421 Estimate 19C Summary: Combined All Job File Pricing

Item	Size	Item Desc	Qty	Mat Unit	Mat Est	Item Source	UPC Code	Vendor Code	Buyer Code
2		1/4"IPD TUBE	130.00	5.00	650.00	Ferguson	0021840004	21124	010C8799A
2		45 ELBOW CW	4.00	11.67	44.28	Ferguson	009121314E	15153	012H0036
2		90 ELBOW CW	5.00	11.32	56.60	Ferguson	00912131322	34481	012H0024
2		COUPLING	5.00	4.00	30.00	Ferguson	00912130762	46728	012H03834
2		JOINTS-SOLDER	28.00	Skip	0.00	Ferguson			
Unfixed		SOLDER WFS-955	9.00	Material	0.00	Ferguson			
Unfixed		PRESTOUTE Blank	9.00	Material	0.00	Ferguson			
Unfixed		POUNDS	0.00	Material	0.00	Ferguson			
Unfixed		FLUX-7 OZ CAN	0.00	Material	0.00	Ferguson			
Unfixed		AGRSIVE CLOTH-DVD	0.04	Material	0.00	Ferguson			
2		AGS BRK TBC D	400.00	5.52	2,200.00	Hanson Pricing	00010121312	10428	00102278F
2		JOINTS	40.00	Skip	0.00	Hanson Pricing			
Unfixed		POUNDS	0.00	Material	0.00	Hanson Pricing			
Unfixed		JOINT COMPOUND-LBE	9.00	Material	0.00	Hanson Pricing			
2-1/2		AGS DWG 40K PE PIPE	230.00	5.13	1,826.30	Hughes Supply	00010121346	0257	001CA388F
2-1/2		45 ELBOW-1R	3.00	7.55	23.95	Hughes Supply	0201402066	25254	00WB00377
2-1/2		90 ELBOW-1R	5.00	8.89	44.45	Hughes Supply	0201402066	25259	00WB00318
2-1/2		TEE	7.00	21.53	144.71	Hughes Supply	0201402066	44876	00WB00480
2-1/2		JOINTS	47.00	Skip	0.00	Hughes Supply			
Unfixed		WELD ROD-LBE	10.00	Material	0.00	Hughes Supply			
Unfixed		OVYGRN-#24 CYL	0.00	Material	0.00	Hughes Supply			
Unfixed		ACETYLENE-#5 CYL	0.07	Material	0.00	Hughes Supply			
4		99E-GH-1/2 BLK GRND	130.00	14.23	1,823.30	Hughes Supply	00010121362	00012	001CA388F
4		45 ELBOW	4.00	45.55	182.20	Hughes Supply	00014020676	27556	010VC0262
4		GVN FLG 125 OBY 80	1.00	1,011.00	1,083.00	Hughes Supply	00012170007	13643	203H02510
4		GVN FLG 125 OBY 85	5.00	491.00	2,490.00	Hughes Supply	00012185647	14011	203H02758
					16,933.76				

Microsoft Office applications are pervasive in the construction workplace. The example shown to the right, called InfoPath®, is prototypical of such applications, and it allows you to design your own templates and use existing templates to transact e-commerce.

Information is simply entered using Microsoft Word or Excel and then directed to the value chain using InfoPath, which can deliver the transaction in different ways (e.g., e-mail, automated business process, or EDI).

Microsoft Office Word 2003

DR CR DR CR April 10, 2004

### Purchase Request

Reference Number:  Date Requested: 10/22/2004

Charge To:  Date Requested:

Submitted By:  Address Line 1:

ID Number:  Address Line 2:

Email Address:  City:

Telephone Number:  State/Province:  Postal Code:

Country/Region:

### Suggested Supplier Information

Company Name:  Telephone Number:

Web Site Address:  Fax Number:

### Shipping Information

Allow Postal shipment  Ship to Address Listed Above

Shipping Method:

Deliver To:  Address Line 1:

Email Address:  Address Line 2:

Telephone Number:  City:

State/Province:  Postal Code:

Country/Region:

### Itemized List

Summary:

Currency:

Item Number	Description	Quantity	Unit Price	Est. Price	Actual Price	Total with Tax
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

File Edit View Tools Window Help

## E-commerce Features and Benefits

What You Get	Investment Required
<ul style="list-style-type: none"> <li>• Data is captured at the source and entered only once</li> <li>• Quick verification, transmission, modification, and filing</li> <li>• Interlinking of procurement with specification databases, take-off systems, estimating (including labor rates) and scheduling software, and project control systems</li> <li>• Ease of status tracking</li> <li>• Ease of reconciling invoices with purchase orders and shipments received</li> <li>• Online supplier catalog customized for your business</li> <li>• Opportunity to implement product standardization</li> <li>• Field can order directly from supplier, with confirming purchase order to office</li> <li>• Document trail for traceability and accountability</li> <li>• Less expediting because supplier inventories and shipments are more accessible</li> <li>• Manufacturer substitutions are readily available</li> <li>• Historical data retrieval and analysis</li> <li>• Consolidation and leveraged spending power</li> <li>• Creation of an environment for supply chain collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and accept that the use of e-commerce is essential to the future success of your business</li> <li>• Commit to implementing or increasing your use of e-commerce</li> <li>• Automate your internal business processes</li> <li>• Develop and train people to use these new technologies</li> <li>• Evaluate your suppliers' e-commerce capabilities</li> <li>• Integrate e-commerce with existing information systems</li> <li>• Develop security and control mechanisms</li> <li>• Mandate your supply chain partners to adapt to e-commerce technology</li> </ul>

## Six Steps for Going Electronic

You need to take six basic steps to institute e-commerce. Understanding that you may not be at step one and identifying where you are in the steps will help avoid unnecessary expenditures of time and money and will assist you in determining what your next steps should be.

Step	Contractor	Supplier
1	Voice communication with supplier	Paper reply
2	Voice communication with supplier	E-mail reply
3	E-mail communication with supplier	E-mail reply
4	E-mail communication with supplier	Automated business process
5	Supplier designated website	Automated business process
6	Electronic Data Interchange (EDI)	EDI

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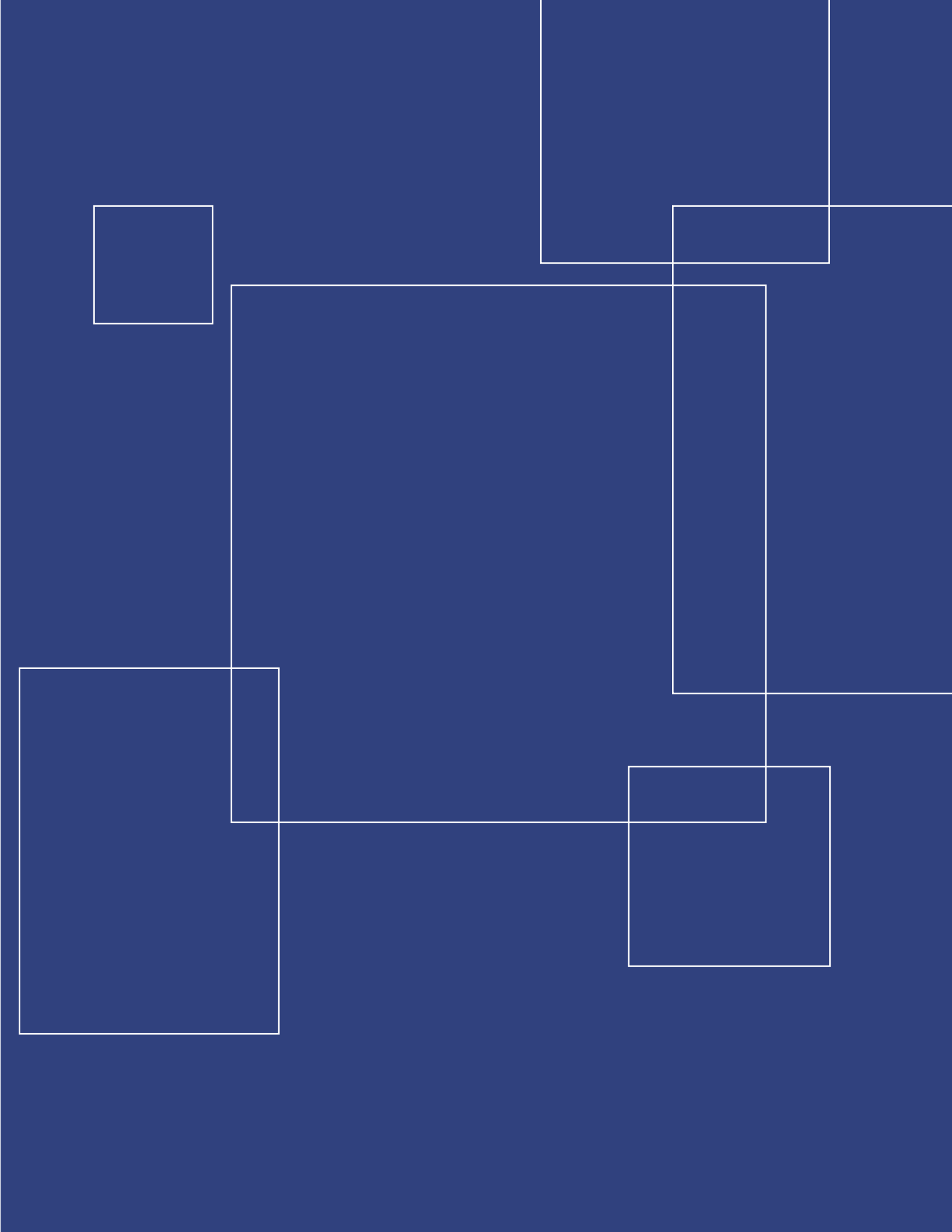
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*“It’s unwise to pay too much, but it’s worse to pay too little. When you pay too much, you lose a little money—that is all. When you pay too little, you sometimes lose everything because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot—It can’t be done. If you deal with the lowest bidder, it is well to add something for the risk you run. And if you do that, you will have enough to pay for something better.”*

—John Ruskin, 1819–1900

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