

CSCP

CERTIFIED SUPPLY CHAIN
PROFESSIONAL

MODULE 3: SOURCING PRODUCTS AND SERVICES

Section A: Aligning Sourcing to Demand



Section A Introduction

Section A Key Processes:

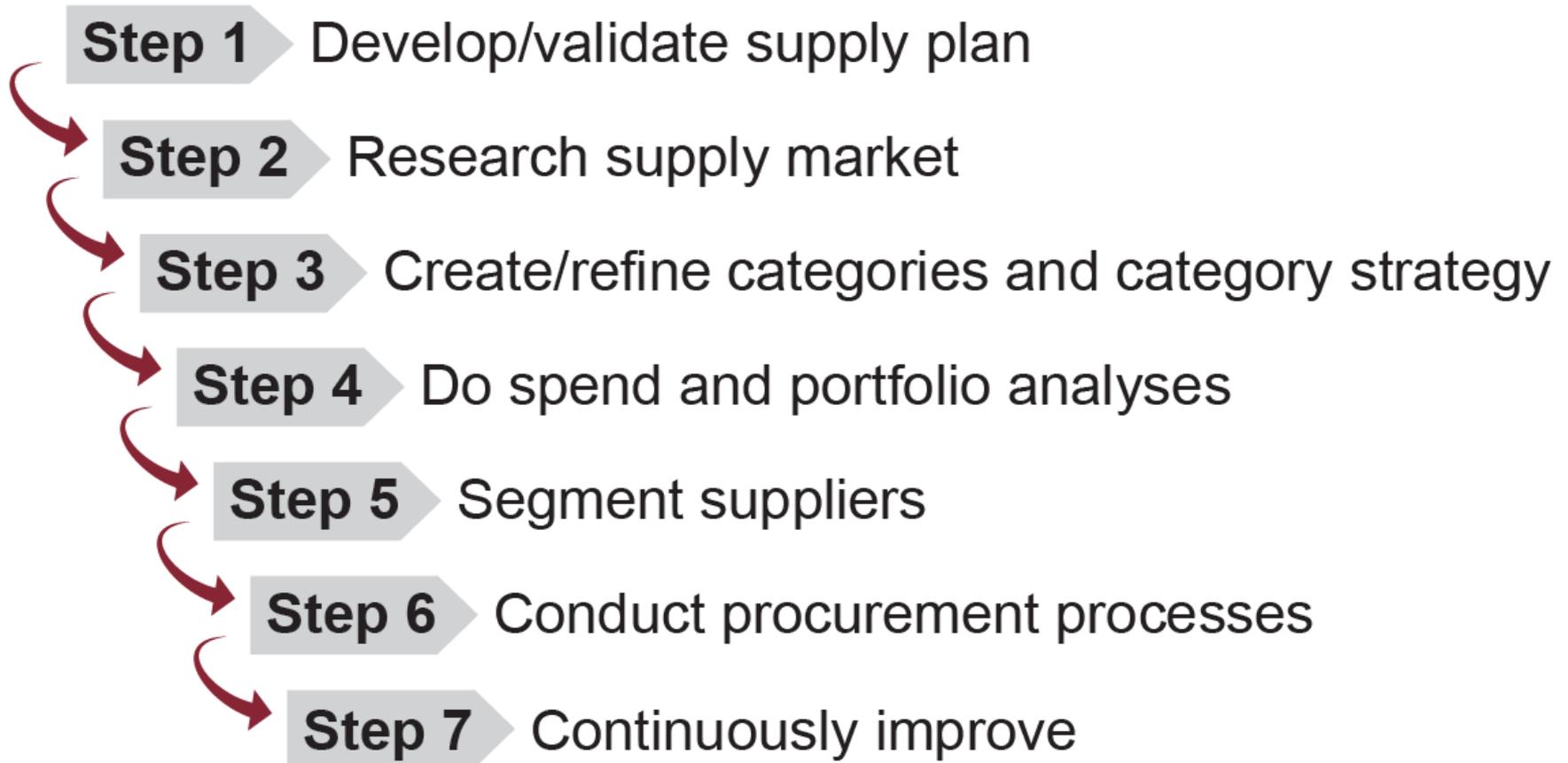
- Aligning sourcing activities to demand
 - Perform make-or-buy analysis.
 - Manufacturing capabilities
 - Core competencies
 - Total cost of ownership (TCO)
 - Define sourcing requirements and timing.

Section A Topics:

- Topic 1: Make-Versus-Buy, Outsourcing, and Offshoring
- Topic 2: Sourcing Requirements and Total Costs

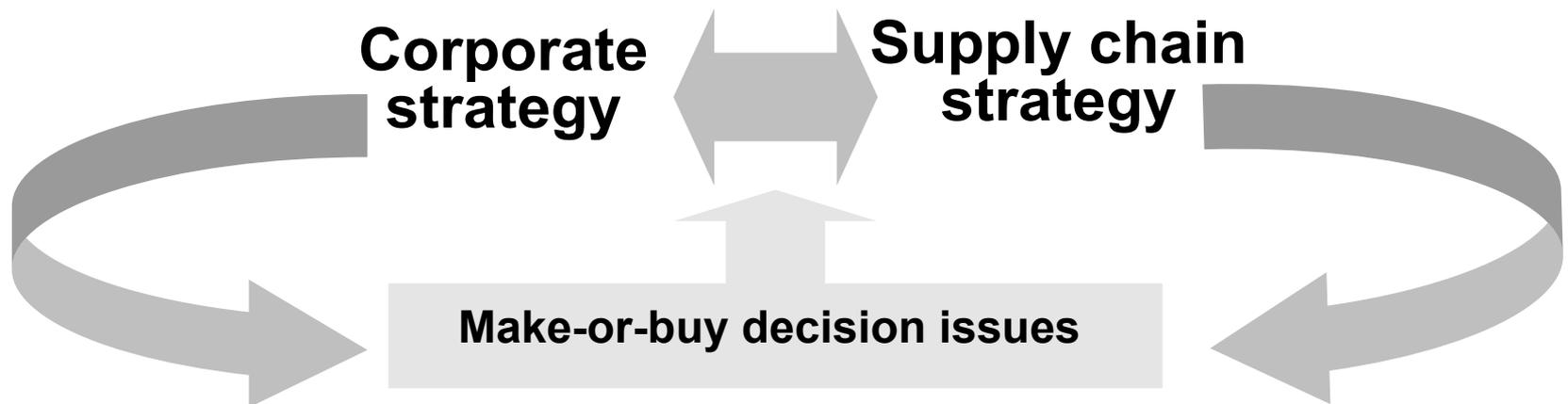
Topic 1: Make-Versus-Buy, Outsourcing, and Offshoring

Sourcing Process



Make-versus-Buy Analysis

- Is the activity a core competency?
- What are the consequences of losing skills or knowledge?
- What is the landed cost or TCO?

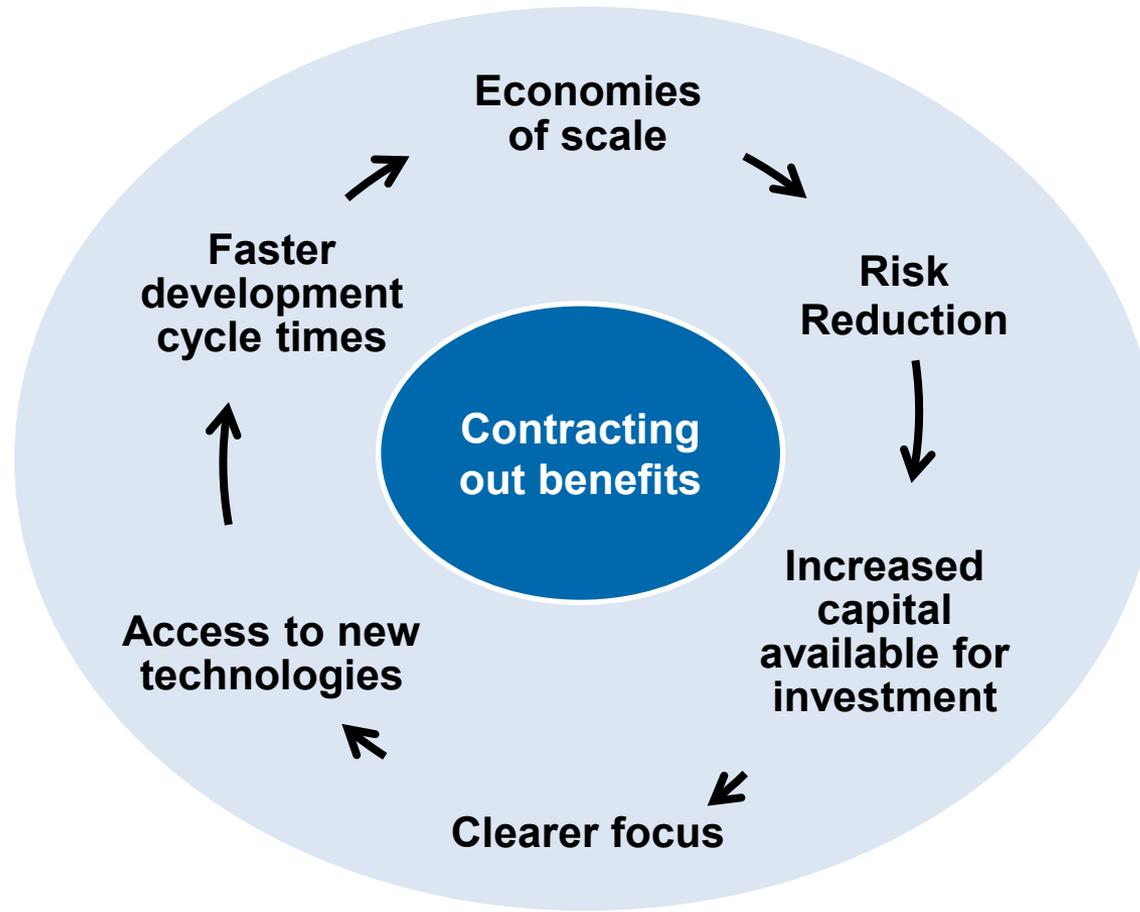


Make/Buy: Is Activity a Core Competency?

1. Does the organization already have the core competency? (Opinions may differ.)
2. Does the market need it?
3. What is the relationship between market need and enterprise capability?
4. Develop core competency to meet market need or outsource?

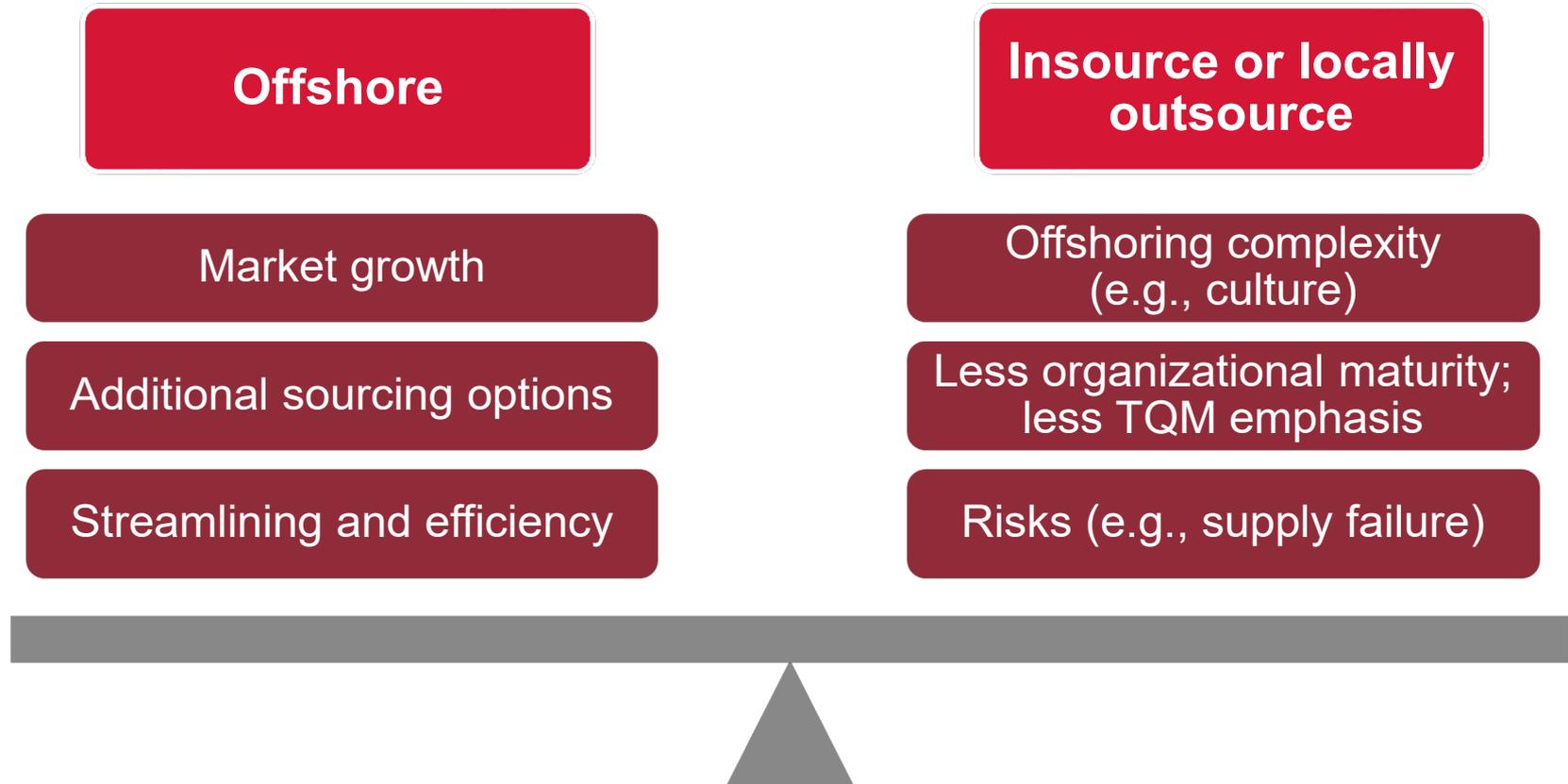
Topic 1: Make-Versus-Buy, Outsourcing, and Offshoring

Benefits of Contracting Out



Topic 1: Make-Versus-Buy, Outsourcing, and Offshoring

Offshoring



Comparing Manufacturing/Assembly Sites

Advantages

- Low labor rates
- Lower material costs
- Lower benefits costs
- Favorable duty rates
- Lower taxes
- Smaller capital investment (if assets are transferred to foreign country)

Risks

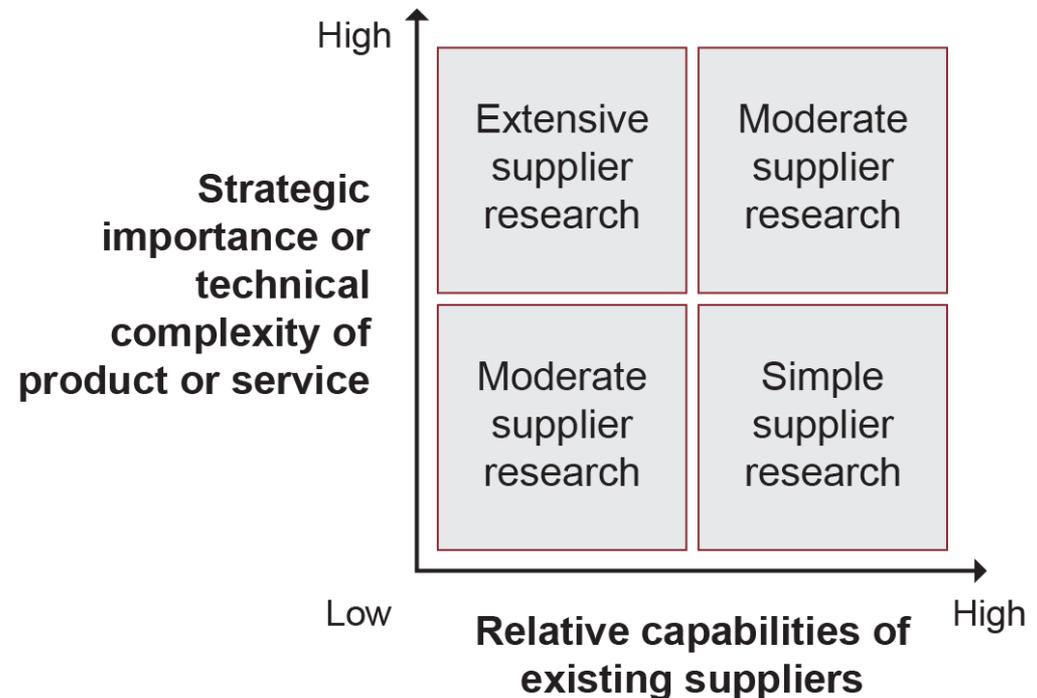
- Time zone difference costs/disruptions
- Worse transport costs/lead times
- Higher relationship management costs
- Possible political risks/instability
- Cost of currency hedging
- Environmental costs for mitigation and responsible forward and reverse logistics
- Need more safety stock
- Higher warehousing or in-transit costs
- More damage, theft, spoilage insurance

Topic 2: Sourcing Requirements and Total Costs

Sourcing Requirements and Timing

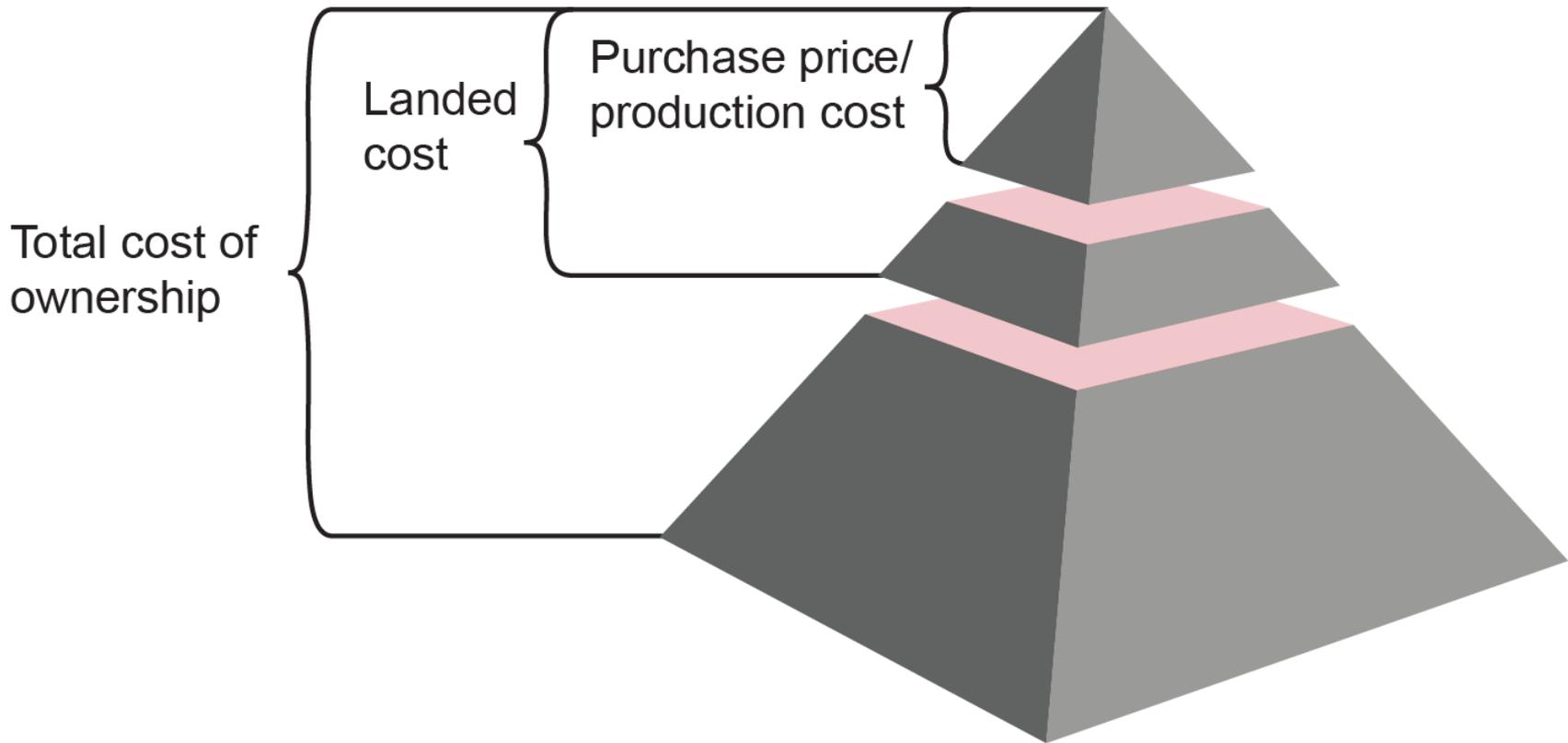
Sourcing and timing requirement categories:

- Cost and target price
- Quality culture, product quality
- Delivery performance
- Lead time
- Available capacity
- Design/collaboration ability
- Time to market
- Sustainability



Topic 2: Sourcing Requirements and Total Costs

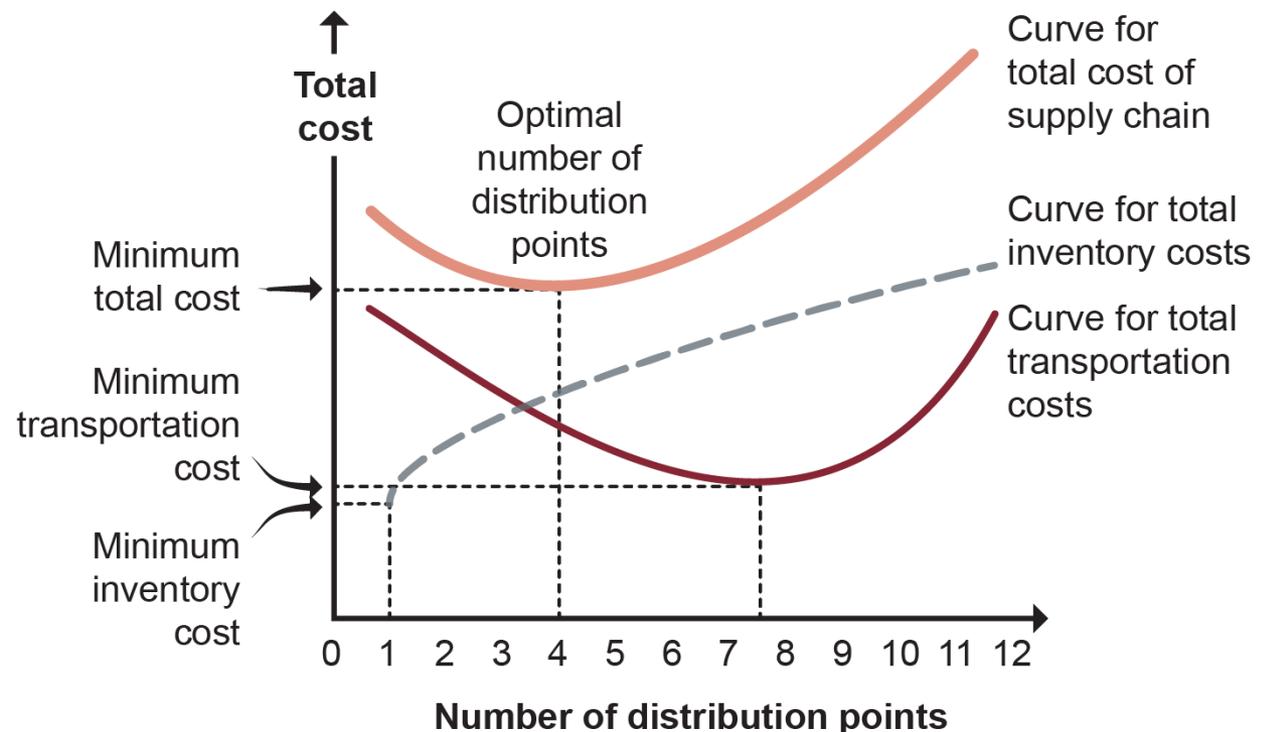
Relationship Between Cost Terminology



Topic 2: Sourcing Requirements and Total Costs

Total Cost of Ownership (TCO)

- Main insight: Acquisition cost is often a very small portion of TCO.
- Reassess incremental costs over time.
- Costs to include:
 - Landed costs
 - Process change costs
 - Ongoing costs
- Should-cost estimate



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SECTION B: CATEGORY STRATEGY FOR SOURCING



Section B Introduction

Section B Key Processes:

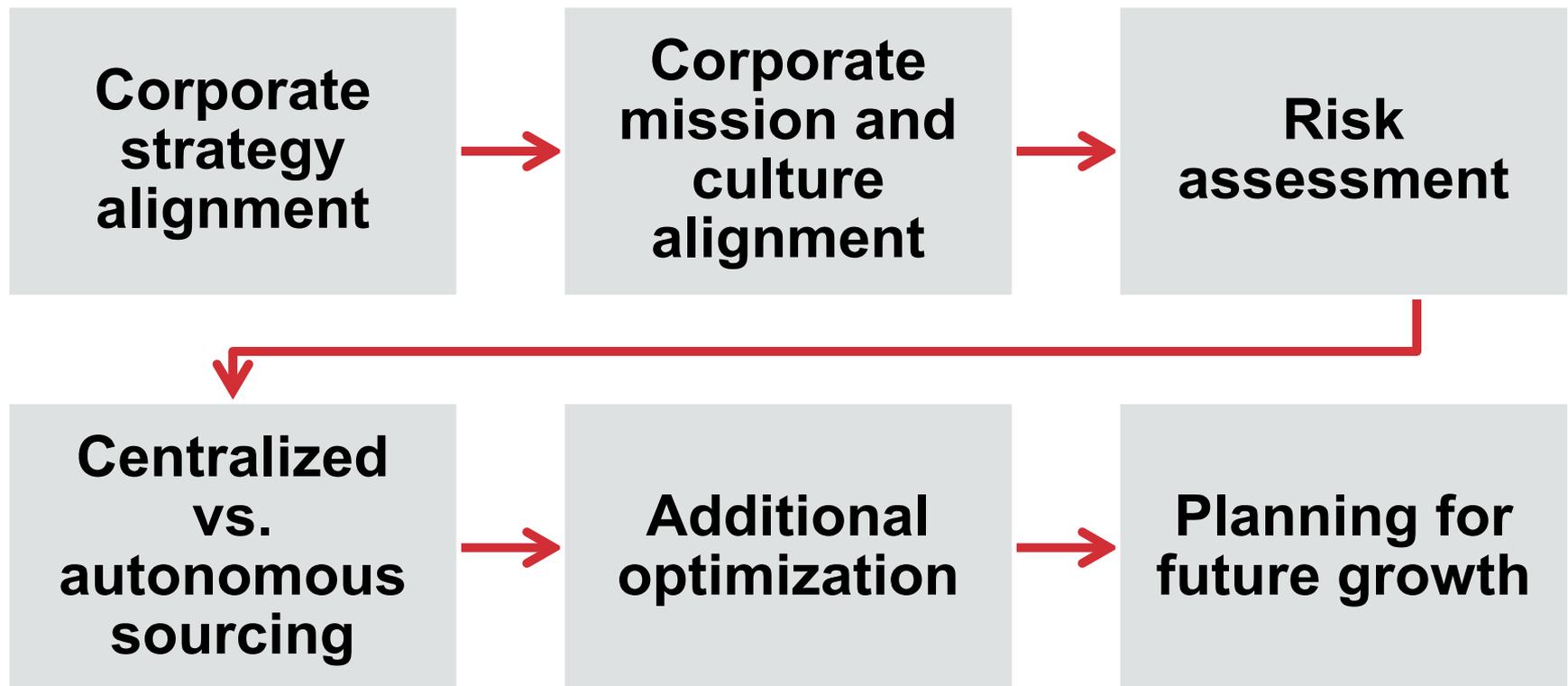
- Manage categories for sourcing of products and services.
 - Create segmented sourcing strategy.
 - Conduct supply base analysis.
 - Identify savings opportunities.
 - Rationalize or right-size supply base.

Section B Topics:

- Topic 1: Supply Plans, Categories, and Segmentation
- Topic 2: Supply Base Analysis and Right-Sizing

Topic 1: Supply Plans, Categories, and Segmentation

Supply Plan Validation and Refinement



Categories and Category Strategy

Sourcing Categories

- Organization-specific group of purchased goods/services
- Should enable better supplier management and purchasing spend
- Segment suppliers for optimum relationship levels

Category Strategy

- Category manager
- Classifying categories by
 - Total spend
 - Number of suppliers
- Portfolio analysis: how much you need supplier
- Supplier segmentation: how much they need you

Topic 1: Supply Plans, Categories, and Segmentation

Strategic Importance and Related Factors

Supplier factors

Cost

Quality

Delivery reliability

Precision

Flexibility

Product/ service factors

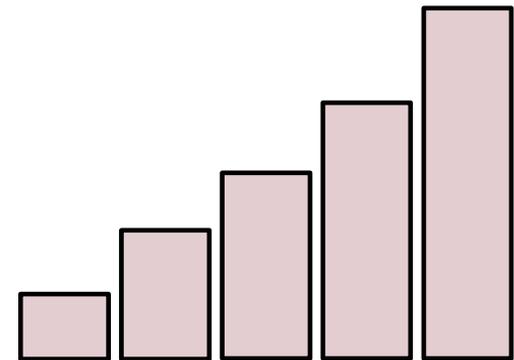
Strategic importance

Complexity

Number of suppliers

Uncertainty

Supply chain difficulties



Intensity of collaboration should account for supplier and product/service requirements.

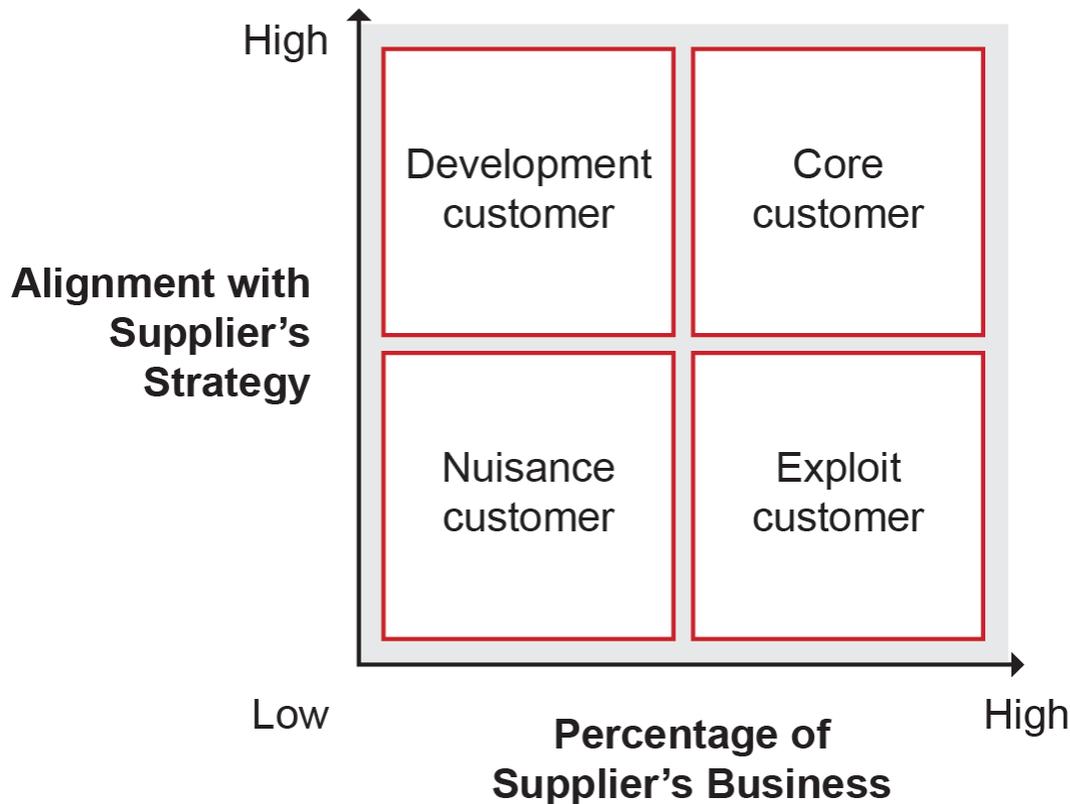
Topic 1: Supply Plans, Categories, and Segmentation

Portfolio Analysis

High	Bottleneck Materials <ul style="list-style-type: none">◆ Suppliers have strong bargaining power.	Direct/Core Competency Materials <ul style="list-style-type: none">◆ There are one or a few suppliers.◆ There is a high impact on value to the customer.◆ Price is a large percentage of the total system/product cost.
	Commodity Materials <ul style="list-style-type: none">◆ Suppliers' relative bargaining power is not strong.	Leveragable Materials <ul style="list-style-type: none">◆ There are many suppliers.◆ Supplier competition is ample.◆ A small percentage of cost savings over a broad base of items can have a large impact on profitability.
Low	Low	High
	Strategic Importance (Profit Impact)	

Topic 1: Supply Plans, Categories, and Segmentation

Segmented Sourcing Strategy



Transactional

Preferred supplier

Strategic relationships

Ownership

Topic 1: Supply Plans, Categories, and Segmentation

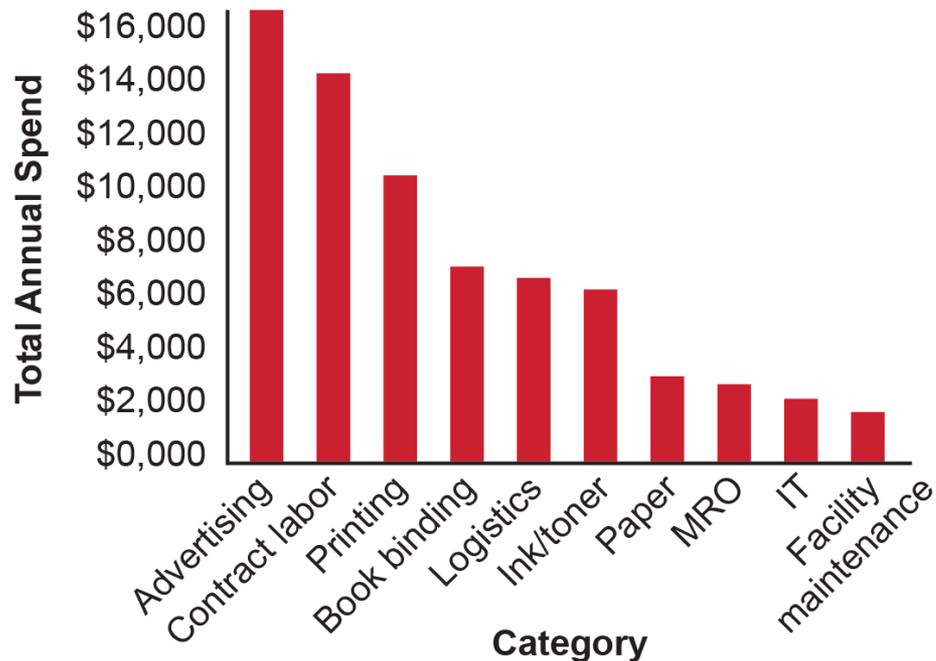
Relationship Types

Relationship	Characteristics				
	Proximity	Visibility	Competitor Interaction	Communication	Culture
Transactional	Arm's length	Purchase requirements	Significant	Computerized	Not an issue
Preferred: Ongoing	Medium term	Some sharing	Some	Designated contact points	Aware
Strategic: Partnership	Longer term	Full sharing	Limited	Department interaction	Aware + adaptive
Strategic: Collaboration/ strategic alliance	Long-term relationship	Sharing + partners' plans as own	Limited or none	Extensive, high trust, licensing	Merging
Ownership: Mergers/ acquisitions	Ownership	Internal, commonly held information	None	Varies	One culture

Topic 2: Supply Base Analysis and Right-Sizing

Supply Base Analysis

Spend Analysis

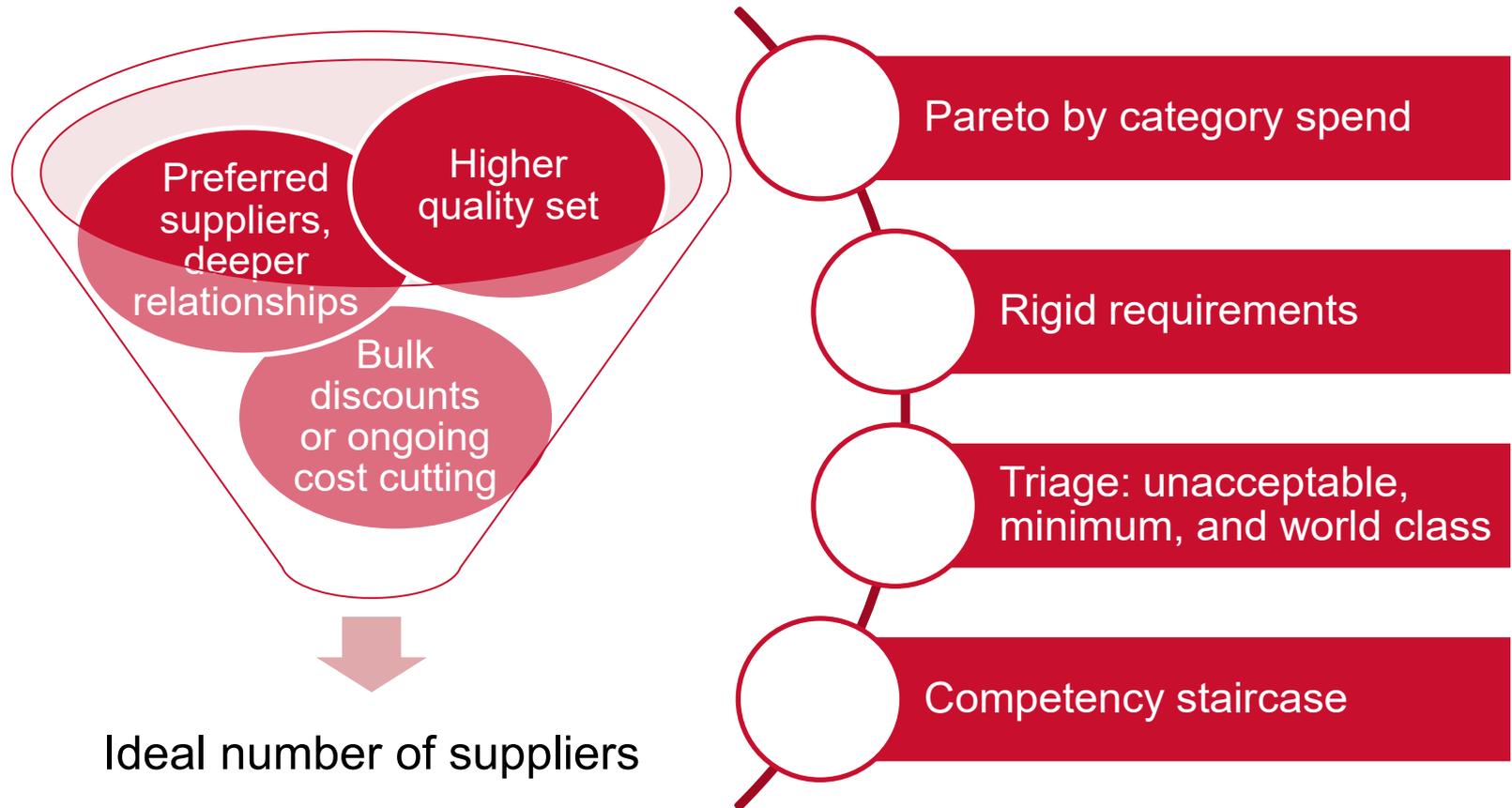


Market Research

- Forecast projected demand per category.
- Translate demand per end item into component demand.
- Review existing suppliers.
- Interviews are effective.
- Get corroboration on external market and local assumptions.

Topic 2: Supply Base Analysis and Right-Sizing

Supply Base Right-Sizing



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SECTION C: PRODUCT DESIGN INFLUENCE



Section C Introduction

Section C Key Process:

- Influence product designs (for manufacturability, sustainability, transportation, or warehousing)

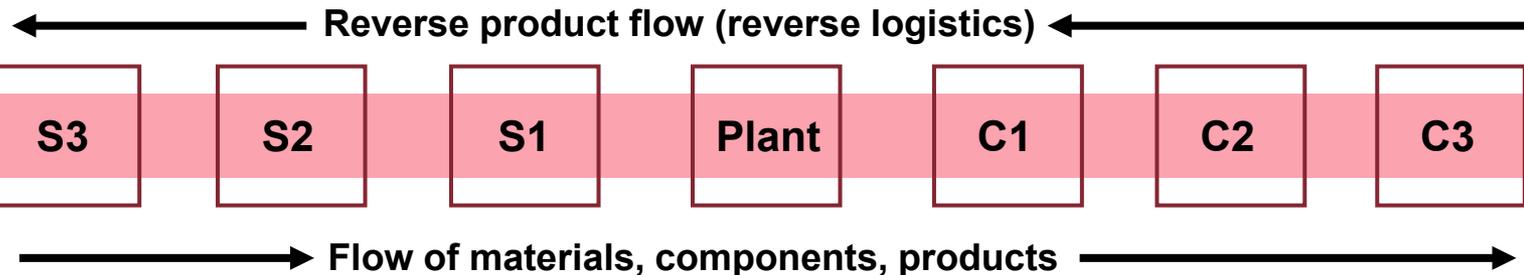
Section C Topics

- Topic 1: Product Design
- Topic 2: Quality, Customization, and Sustainability

Topic 1: Product Design

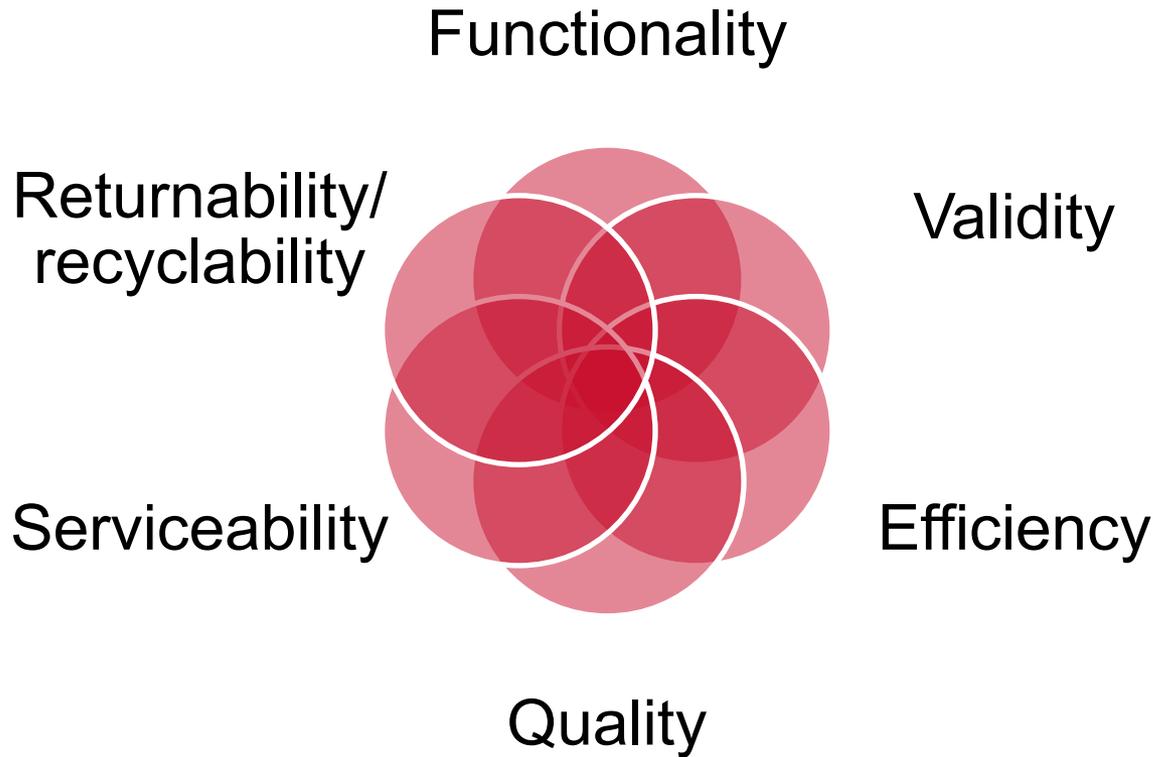
Impact of Product Design Choices

On supply	On manufacture and assembly	On logistics	On sale, service, use, returns, etc.	
What raw materials? How to source materials?	How many components? How hard to assemble—and when?	How difficult to make? How costly—machines, labor, etc.?	How easy or hard and how costly to transport and warehouse?	How reliable, easy to use, easy to service, easy to recycle or reuse?



Topic 1: Product Design

Begin with the End in Mind: Great Value has...



Topic 1: Product Design

Traditional Over-the-Wall vs. Collaborative Design

Over-the-Wall Design

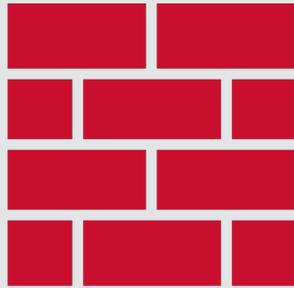
- Marketing sends customer requirements to engineering.
- Engineering: full-featured design.
- Purchasing: unaffordable parts.
- Production: costly changes.
- Rework.
- Logistics finally gets design,
- but SC/packaging too costly.

Collaborative Design

- Design team initially includes engineers, other departments, and possibly SC partners.
- Design team considers issues from raw material to final stage of product life cycle, approximating cost differences.
- Given approval by all functions and partners, purchasing and production start detailed design.

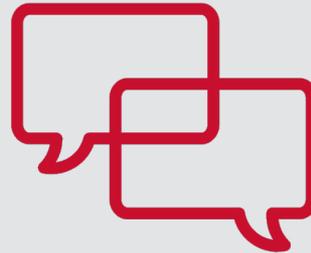
Topic 1: Product Design

Design and Development Collaboration



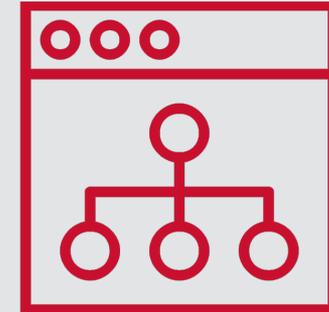
Over-the-wall approach

- Supplier/customer plays no role in design.



Informal collaboration

- Conversations or informal consultation with suppliers/customers.



Formal collaboration

- VOC.
- Regular formal input.
- Supplier designs subcomponent.

Implementing Collaboration and Its Benefits

Implementing Design Collaboration

1. Proof of concept.
2. Formalize concepts.
3. Formalize processes.
4. Prioritize opportunities based on best value to encourage adoption.

Benefits of Design Collaboration

- Fewer cost overruns
- New and improved approaches to design
- Improved customer satisfaction
- Improved efficiency (faster to market)
- Higher product quality for the price

Topic 1: Product Design

Design Methods

Broad-based methods

- ◆ Design for supply chain
- ◆ Design for logistics
- ◆ Design for X (DFX)

Standardization and modularization

- ◆ Modular design
- ◆ Component commonality
- ◆ Universality

Simplification

- ◆ Concurrent engineering
- ◆ Design for manufacture and assembly (DFMA)
- ◆ Design for service

Quality

- ◆ Design for quality
- ◆ Design for six sigma
- ◆ Quality function deployment (QFD)

Customization

- ◆ Postponement
- ◆ Mass customization
- ◆ Glocalization

Sustainability

- ◆ Design for the environment
- ◆ Design for reverse logistics
- ◆ Design for remanufacture

Topic 1: Product Design

Design for Logistics

Supply chain and product designed simultaneously.

Benefits

↓ cost = ↑ profit margins.

Warehouses store more goods, reducing capacity pressures.

Master carton for restocking.

Retailers can sell from pallet.

Minimize transportation and storage costs: efficient packaging for fast loading/unloading and higher density per pallet.

Minimize manufacture and assembly time.

Maximize standardization.

Tradeoffs

Slow-moving goods not wanted in larger quantities.

Standard box sizes may conflict.

Cube out vs. weigh out balance.

Topic 1: Product Design

Modular Design (Modularization)

Design components for use in all products in a family.

Benefits

Lower design cost for product family.

Production streamlining.

Expanded customer base.

More efficient logistics.

RAM modules for computers.

Modular bookshelves.

***À la carte* menu.**

Tradeoffs

Higher cost per product (lower for family).

Possible reduction of fit, finish.

Topic 1: Product Design

Component Commonality (Standardization)

Replace similar parts with a single part.

Benefits

Lower cost for bulk purchase of identical parts.

Production streamlining.

Simpler, cheaper storage.

Replace multiple bolt sizes with one size.

Tradeoffs

Cost of product modifications.

Loss of design flexibility.

Possible reduction in quality.

Topic 1: Product Design

Universality (Standardization)

Design one product for multiple markets.

Benefits

Increased sales volume.

Reduced cost of design, manufacturing compared to market-specific products.

“One size fits all” and “unisex” clothing.

Cars, trucks with option packages for different market segments.

Tradeoffs

Potential loss of sales in each particular market.

Loss of customer loyalty.

Topic 1: Product Design

Concurrent Engineering (Simplification)

Engineers and other stakeholders contribute.

Benefits

Design collaboration.
Parallel rather than sequential.
Virtual design meetings.

Shorten/simplify design.

Tradeoff

Newer methodologies exist.

Topic 1: Product Design

DFMA (Evolution of Concurrent Engineering)

Involves manufacturing function in initial stages for ease of production.

Benefits

Less confusion, complexity, variability, production delays, setup times, and training.

Enforced by standards/policies.

Standardizes parts.

Helps lean, modular design, and mass customization.

Software automates DFMA.

Component tolerances.

Fewer parts.

Less part handling.

Concurrent steps.

Assembly obvious/easy.

Simplify assembly steps.

Design in easy testing.

Tradeoffs

Could be at odds with customer desires if features are omitted.

Topic 1: Product Design

Design for Service

Simplification to improve after-sale service.

Benefits

Lower total cost of ownership.

Extends to logistics (replacement parts source of profitability).

Serviceability/maintainability affects customer satisfaction.

Faster replacement of filters, etc., lowers lifetime cost.

Tradeoffs

Conflict with other design goals.

Topic 2: Quality, Customization, and Sustainability

Design for Quality

Quality measures show if design meets target market needs, performance, aesthetics, and cost.

Benefits

Fewer defects = less waste, satisfied customers.

Can compete on quality.

Goals for exceptional quality.

Tradeoffs

Initial expense/benefits hidden.

Topic 2: Quality, Customization, and Sustainability

Quality Function Deployment (QFD)

Eliminate gap between what customer wants and product capabilities.

Benefits

Improves customer service.

Shows interactions between product features for prioritization when some conflict.

Design, operations, and support philosophy.

Compares against competitor features.

Tradeoffs

Complex methodology.

Topic 2: Quality, Customization, and Sustainability

Postponement (Customization)

Shifts product differentiation closer to consumer by postponing assembly or packaging to last possible SC location.

Benefits

Counters bullwhip effect.

Less in-transit inventory, insurance, and handling costs and more cash flow.

Locally source locally needed materials.

Example of push-pull strategy (start generic).
Production starts based on aggregate forecasts.
Differentiation based on actual demand signals.

Tradeoffs

Process, equipment, product, and packaging redesign costs.

May increase costs if there are few product varieties.

Topic 2: Quality, Customization, and Sustainability

Mass Customization

Mass production to create large volume and variety with low production costs and custom output primarily using postponement.

Benefits

**Economies of scale.
More efficient, expert assemblers.
Higher sales (more markets/segments).
Lower inventory costs.**

Modular design.

HP's assembly of printers at distributor, not factory.

Tradeoffs

**Investment costs for new equipment, training, quality.
Possible friction with distributors over added tasks.**

Topic 2: Quality, Customization, and Sustainability

Design for Environment

Consider health, safety, and environment during design and development.

Benefits

Fits SC emphasis on total life cycle.

Better reputation.

Less liability/legal costs.

Marketable environmental friendliness.

Provision for reuse or recycling.

Reduced energy consumption.

Avoidance or mitigation of hazmat.

Use lighter/fewer components.

Tradeoffs

Increased manufacturing costs and higher sales price.

Reduced safety or longevity from less weight/preservatives.

Design for Reverse Logistics

Design to efficiently handle returns, repairs, replacement, or recycling.

Benefits

Loyalty from ease of process.
Lower cost of returns.
Feedback for designs.

Package to reduce common user errors/frustrations.
Box for shipping + return.

Tradeoffs

Underestimate complexity.

Design for Remanufacture

Allowing components to be reused in other products.

Benefits

Low materials and resource cost.

Cost savings for consumer.

Environmental law conformance.

Associated with green manufacturing.

Caterpillar's customer-focused replacement of heavy equipment parts.

Tradeoffs

Cash tied up in inventory longer.

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SECTION D: SUPPLIER SELECTION, CONTRACTING, AND USE



Section D Introduction

Section D Key Processes:

- Evaluate and select suppliers.
 - Manage initial supplier qualifications/evaluation.
 - Determine value-added services.
 - Develop contracts.
 - Negotiate terms and conditions, pricing, and delivery terms.
- Manage purchase orders.
 - Place orders (standard, blanket, and e-procurement).
 - Reconcile and approve invoice for payment.
 - Track, expedite/de-expedite, and process changes.
 - Analyze sourcing processes for automation.

Section D Topics:

- Topic 1: Supplier Evaluation and Selection
- Topic 2: Contracts
- Topic 3: Purchase Orders

Topic 1: Supplier Evaluation and Selection

Functions of Purchasing

1. Supplier selection
 2. Negotiation
 3. Order placement
 4. Supplier follow-up
 5. Supplier performance measurement and control
 6. Value analysis
 7. Evaluation of new materials and processes
- 

Topic 1: Supplier Evaluation and Selection

Supplier Selection

	Supplier's perspective	Buyer's perspective
Traditional thinking	<ul style="list-style-type: none">• Highest profit margin• Disregard customer needs• Short-term transactions	<ul style="list-style-type: none">• Lowest price• Disregard supplier impact• Short-term transactions
Supply chain thinking	<ul style="list-style-type: none">• Strategic view of sourcing• Long-term success of all partners in SC• Cooperatively established:<ul style="list-style-type: none">✓ Pricing✓ Discounts✓ Delivery timing• Ongoing relationships or alliances• Total cost of ownership and reputation effects	

Topic 1: Supplier Evaluation and Selection

Total Cost of Ownership

CPC # PO332932

Description: 3/8" Copper Tubing Type M, 10' long

Suppliers	A (Brazil)	B (Korea)	C (China)	D (U.S.A)
Landed costs				
Price per unit	USD 9.800	USD 9.600	USD 8.200	USD 11.200
Inbound transportation	1.200	1.600	1.650	0.211
Total landed costs	11.000	11.200	9.85	11.411
Life-cycle costs				
Contracting	0.200	0.200	0.200	0.200
Business unit purchasing	1.488	0.880	0.990	0.790
Logistics administration	2.120	2.570	2.100	1.110
Receiving	0.027	0.032	0.054	0.012
Inspection	0.050	0.070	0.110	0.080
Cost of internal quality	0.430	0.540	0.520	0.780
Inventory carrying	1.200	1.600	1.650	0.08
Accounts payable	0.050	0.050	0.050	0.050
Exchange rate factor	0.057	2.000	0.003	0.000
Outbound transportation	0.100	0.100	0.100	0.100
Waste disposal	0.054	0.054	0.054	0.054
Cost of external quality	0.068	0.064	0.062	0.080
Total LCC	5.844	8.160	5.893	3.336
TCO (Landed + LCC)	USD 16.844	USD 19.360	USD 15.743	USD 14.747

Topic 1: Supplier Evaluation and Selection

Supplier Corporate Social Responsibility (CSR)

- Organization, its employees, and suppliers hold selves accountable for:
 - Consumer health and safety
 - Employee health and safety
 - Environmental sustainability
 - Maintainability
 - Employment policy
 - Community reinvestment and use of local goods and services.
- Legal review is needed to ensure compliance with related laws and regulations in each jurisdiction.

Topic 1: Supplier Evaluation and Selection

Negotiations

Hard and Soft Negotiations

- Hard negotiators (win/lose)
 - Adversary to be beaten.
 - Take position, demand concessions, give none.
 - Threaten or mislead.
- Soft negotiators (lose/win)
 - Value agreement too much.
 - Disclose bottom line.
 - Accept one-sided agreements/concessions.

Principled Negotiations

- Negotiations should:
 - Solve underlying issues.
 - Preserve relationships.
 - Result in enduring, fair agreements.
- Interest-based bargaining:
 - Separate the people from problem.
 - Focus on interests, not positions.
 - Invent options for mutual gain.
 - Insist on objective criteria.

Topic 1: Supplier Evaluation and Selection

Contract Performance

Contract Deployment

- Navigate legal.
- Communicate with winner.
- Promote new agreements with internal buyers.
- Database entry.
- Order-to-pay procedures.
- Train users/suppliers.
- Validate performance.
- Use transaction management.
- Audit invoices.

Compliance Management

- Concentrate with preferred suppliers.
- Measure compliance vs. off-contract purchases.
- Report findings.
- Monitor supplier KPIs.
- Audit supplier pricing.
- Monitor contract expirations, renewals, and discount use.
- Continually improve.
- Establish baselines.

Topic 1: Supplier Evaluation and Selection

Measuring Supplier Success/Avoiding Pitfalls

Establish clear performance expectations.

Measure against performance expectations regularly.

Maintain ultimate responsibility.

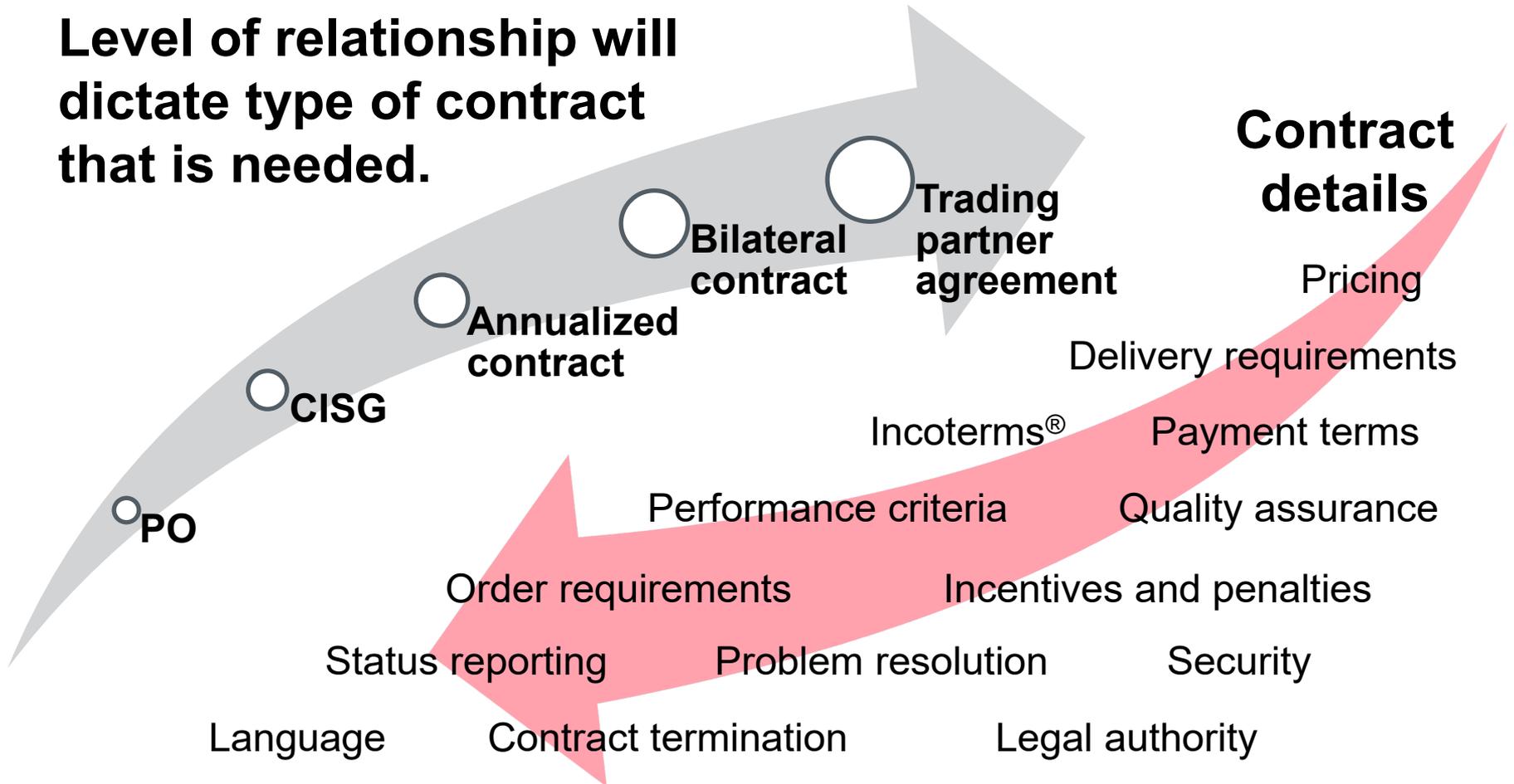
Coordinate activities of multiple suppliers and share learning.

Maintain an exit strategy.

Topic 2: Contracts

Contract Types and Details

Level of relationship will dictate type of contract that is needed.



Topic 2: Contracts

Payment Terms

Trade Credit

- Sale of goods or services in which payment is not due right away.
- Gives the buyer time to convert the good or service into revenue themselves before making payment.

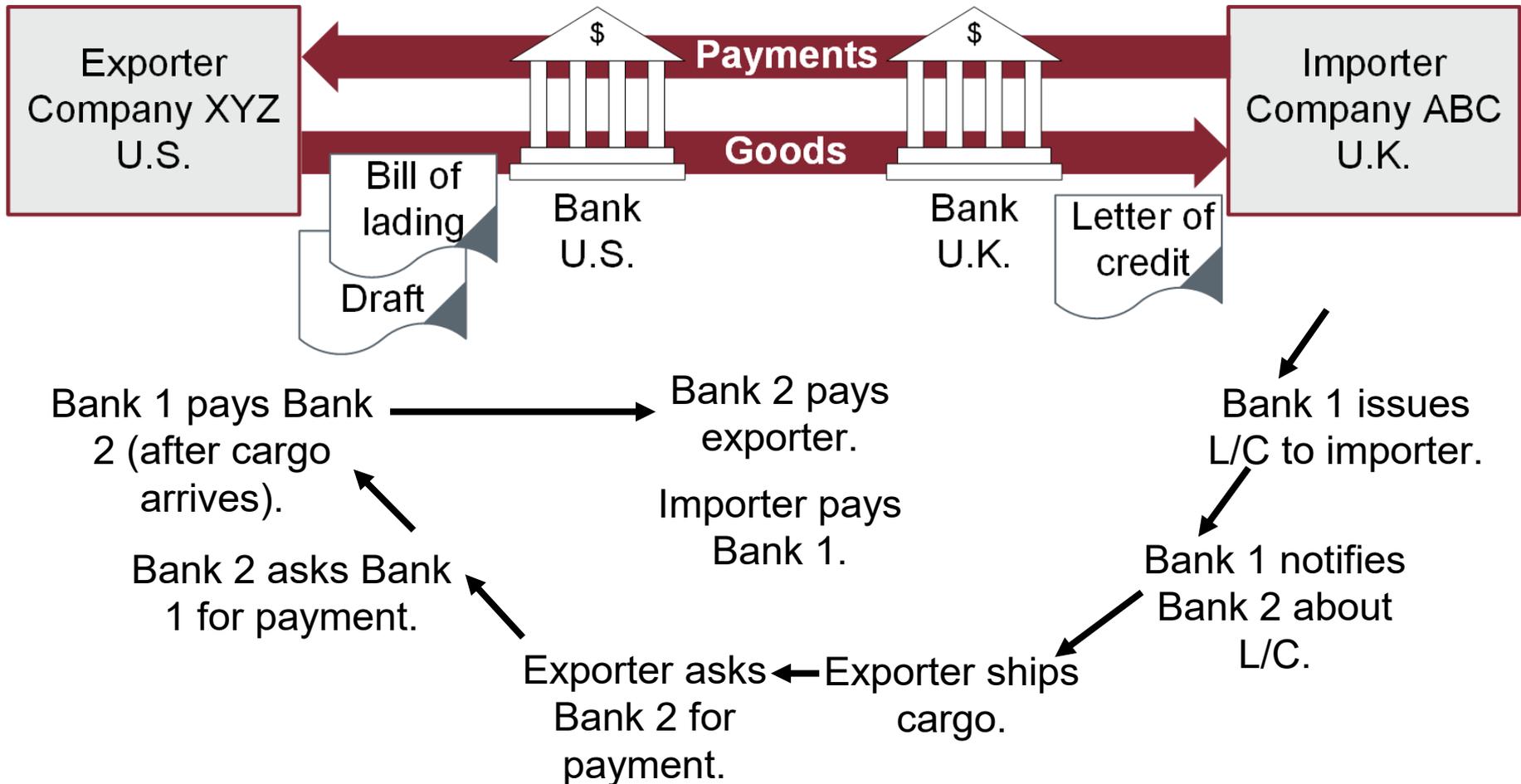
Open Account

- Buyer has a credit limit with the organization or a bank.
- Buyer can make orders or write drafts up to the limit to pay for goods or services on receipt or on a deferred basis.

Offered only to trading partners with good credit records and healthy financials

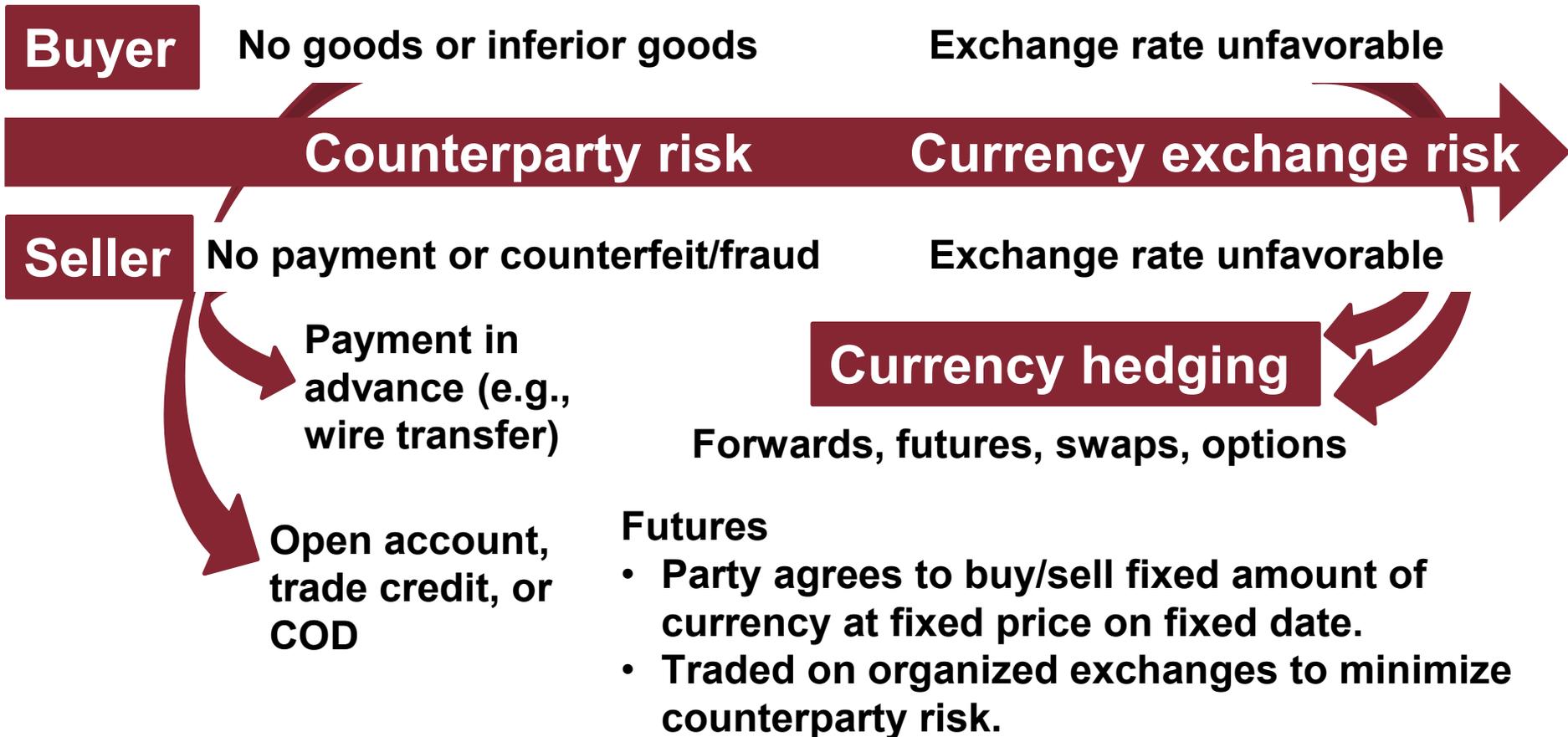
Topic 2: Contracts

Letters of Credit (L/C)



Topic 2: Contracts

Currency Issues



Topic 3: Purchase Orders

Placing Orders

Purchase orders

- Initial or one-time
- All terms and conditions
- Functional areas informed of stage

Blanket POs

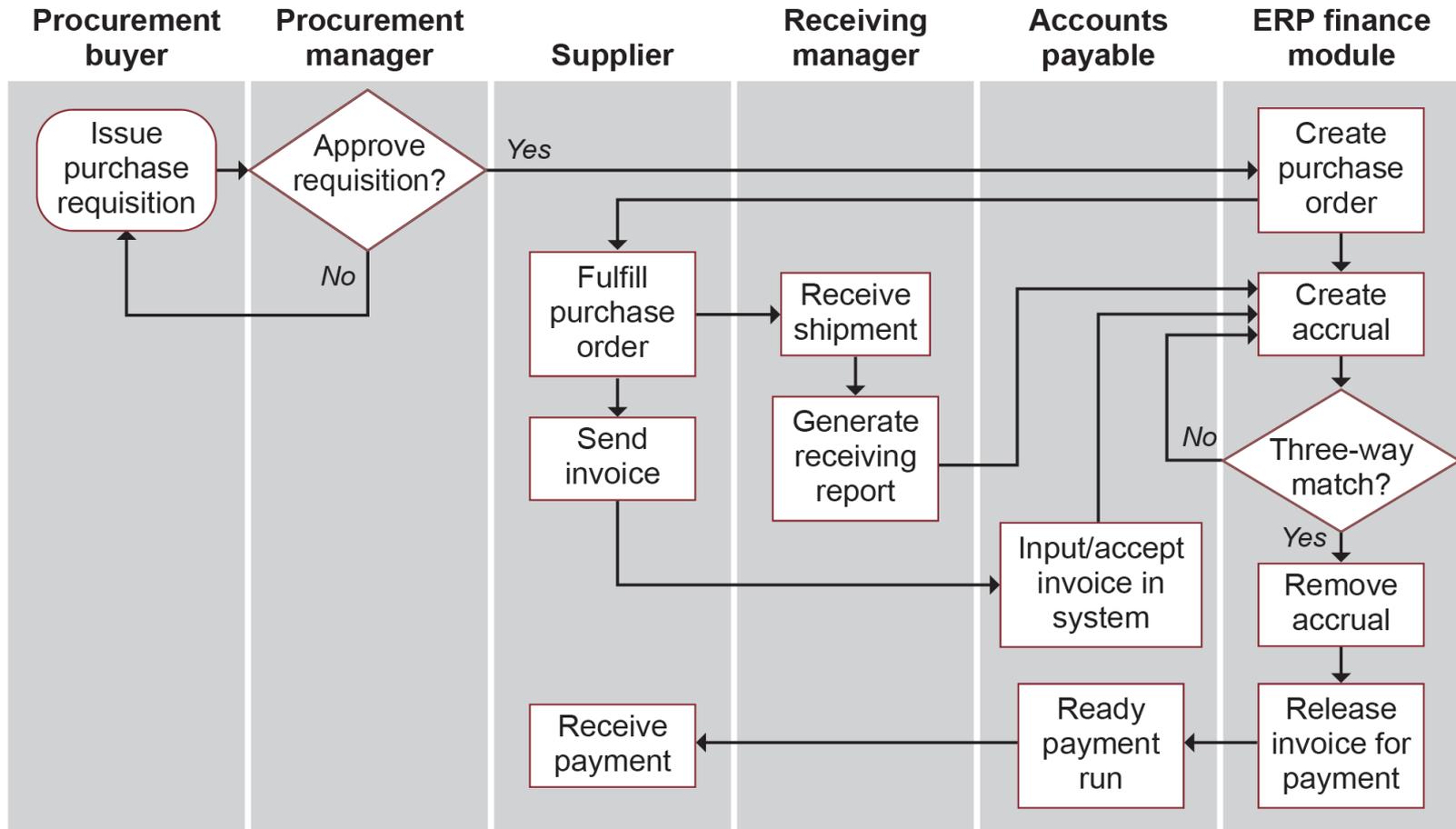
- Long-term commitment, short-term releases
- Master terms and conditions
- Discounts, lead times, quality

E-Procurement

- Auctions
- Reverse auctions
- Exchanges
- Portals

Topic 3: Purchase Orders

Reconciling and Approving Invoices



Topic 3: Purchase Orders

Order Tracking (Internal)

Functional Area	Tracking Needs
Purchasing	Primary tracker of open order status and exceptions.
Sales	Notify customers of potential delays/issues.
Accounts payable	Forecast future accounts payable obligations.
Accounting	Accurate financial records.
Requesting functional area	Look up orders by order number, be informed of issues.
Receiving	Forecast inbound workload and space needs.
Traffic	Inbound inventory requirements to schedule carriers or internal fleets.

Topic 3: Purchase Orders

Expediting

Application

- Any stage of the supply chain
- Should be very rare

Causes

- Inventory shortages
- Poor demand forecasting

To rush or chase production or purchase orders that are needed in less than the normal lead time

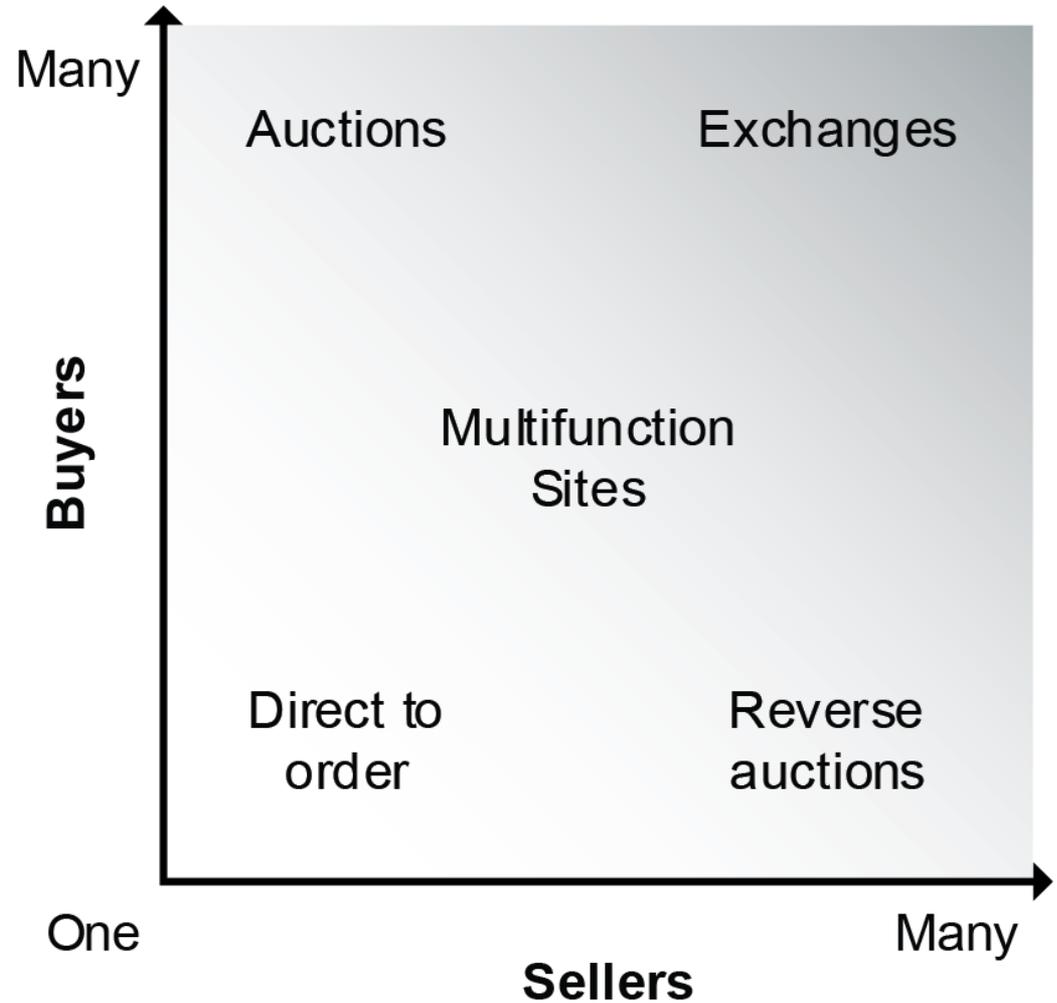
Topic 3: Purchase Orders

Expediting of Transportation

- Faster mode of transport
 - Overnight
 - Upgrading from ground to air
- Additional costs
 - Paid by shipper or customer depending on reason

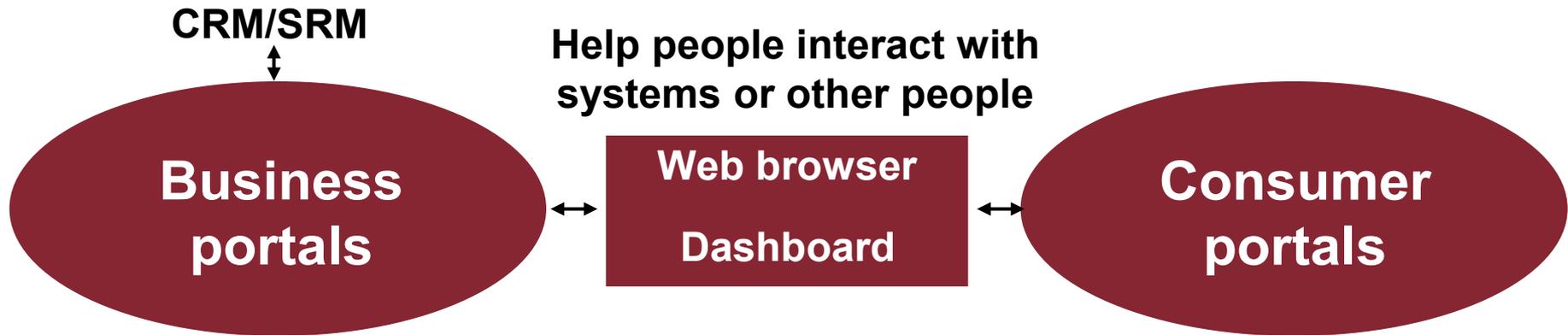
Topic 3: Purchase Orders

B2B Digital Transaction Models



Topic 3: Purchase Orders

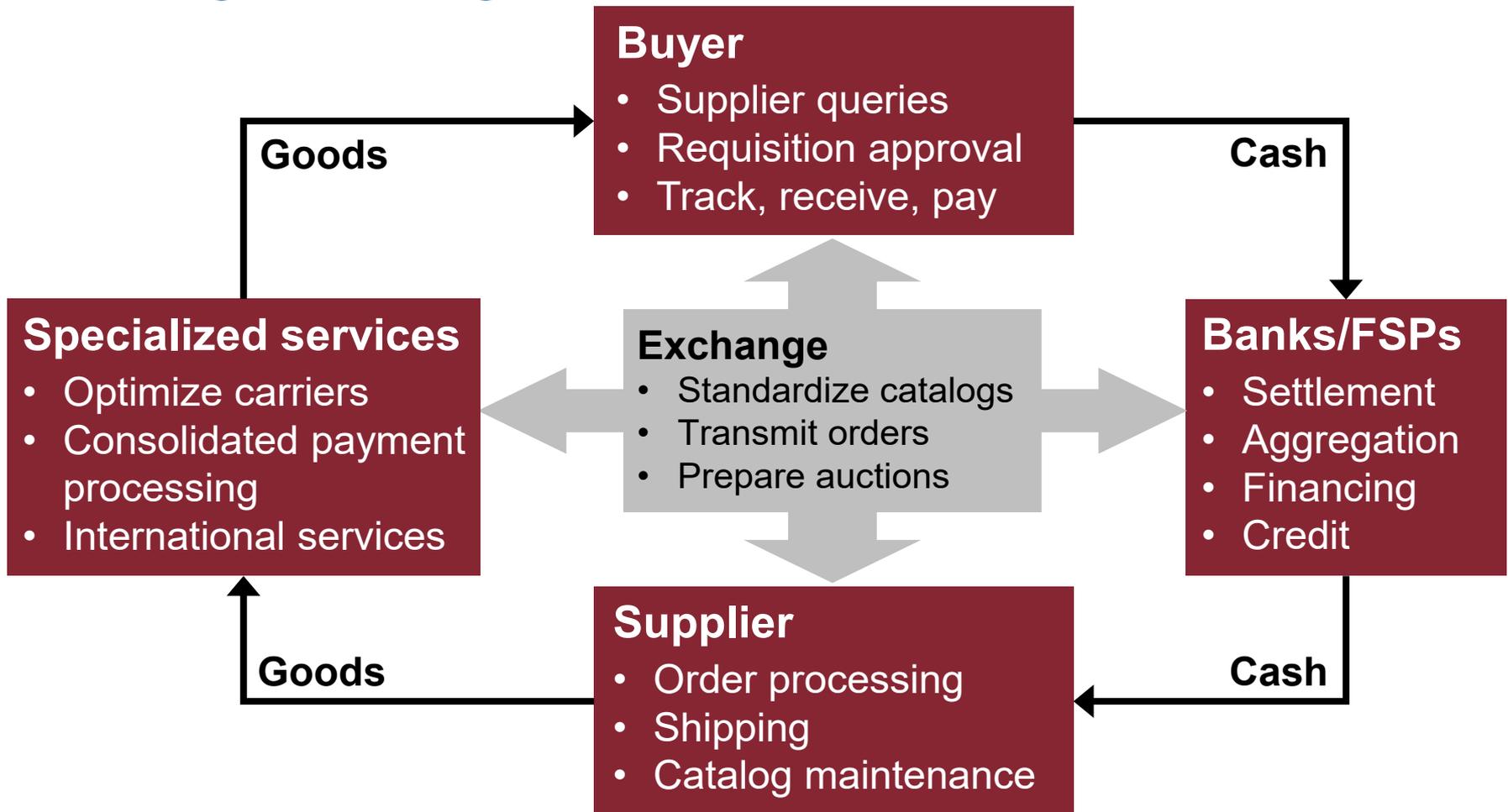
Portals



- Intranets and extranets
- Authentication and security
- Read-only exceptions, forecasts, demand-pull signals
- Dynamically aggregate internal and external information
- Multiservice websites
 - E-mail
 - Personalized home pages
 - Online shopping and search
 - News

Topic 3: Purchase Orders

Trading Exchanges



Topic 3: Purchase Orders

Auctions

- Classic or forward auctions
- Reverse auctions
- Dutch auctions
- Demand management auctions
- Stock-market style auctions



Dutch auction named after Dutch tulip auctions. Dutch auctions are used for U.S. Treasury securities.

Topic 3: Purchase Orders

Trade Exchange Benefits and Risks

Benefits for Buyers

- Purchasing agreement control
- Standard product specifications
- Lower administrative, transportation, logistics, and unit costs
- Faster time-to-market
- Catalog accuracy

Risks for Buyers

- Lower-quality goods
- Nonconformance
- Product rework/returns
- Long-term loss of suppliers and fewer skilled suppliers
- Ruining years of relationship building

Topic 3: Purchase Orders

Trade Exchange Benefits and Risks

Benefits for Suppliers

- Automatic connections
- Wider market, all inventory
- Faster order to cash
- Better future bidding
- Better catalogs
- Cheaper transactions, transportation, and logistics
- Less replenishment lead time
- Supply/demand collaboration

Risks for Suppliers

- Reduction in revenue/unprofitable margins
- Option contracts consume capacity
- Fewer internal investments
- Business continuity risk
- Buyers use seller's information to buy elsewhere
- Exchange integration costs