

# **CPIM** CERTIFIED IN PLANNING AND INVENTORY MANAGEMENT

## **MODULE 1: SUPPLY CHAINS AND STRATEGY**

## Supply Chains and Strategy

- Section A: Supply Chains, the Environment, and Strategy
- Section B: Environment Analysis and Strategic Scope
- Section C: Developing and Managing Strategy at Various Levels
- Section D: Performance Monitoring and KPIs

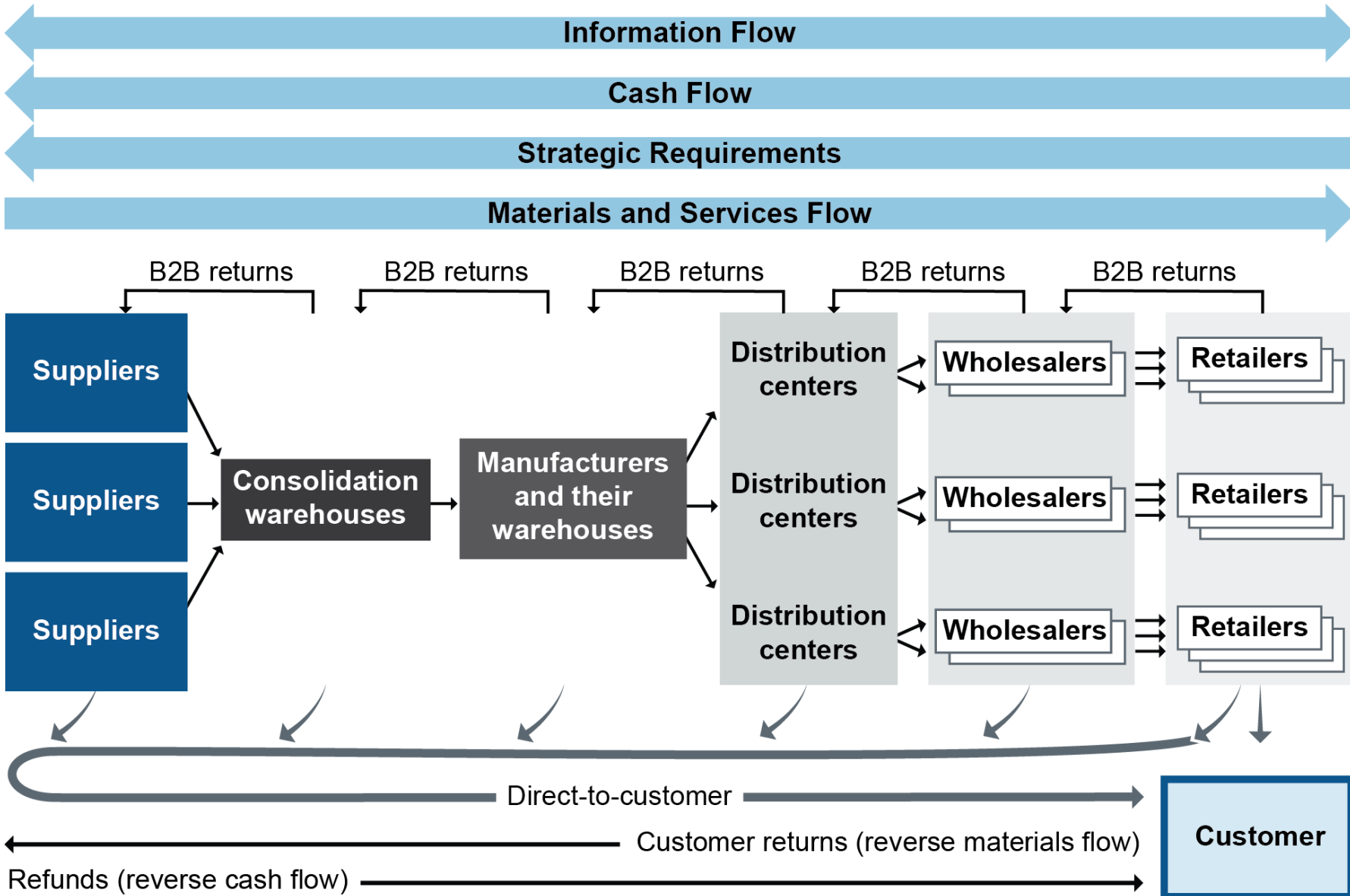
# **CPIM** CERTIFIED IN PLANNING AND INVENTORY MANAGEMENT

## **SECTION A: SUPPLY CHAINS, THE ENVIRONMENT, AND STRATEGY**

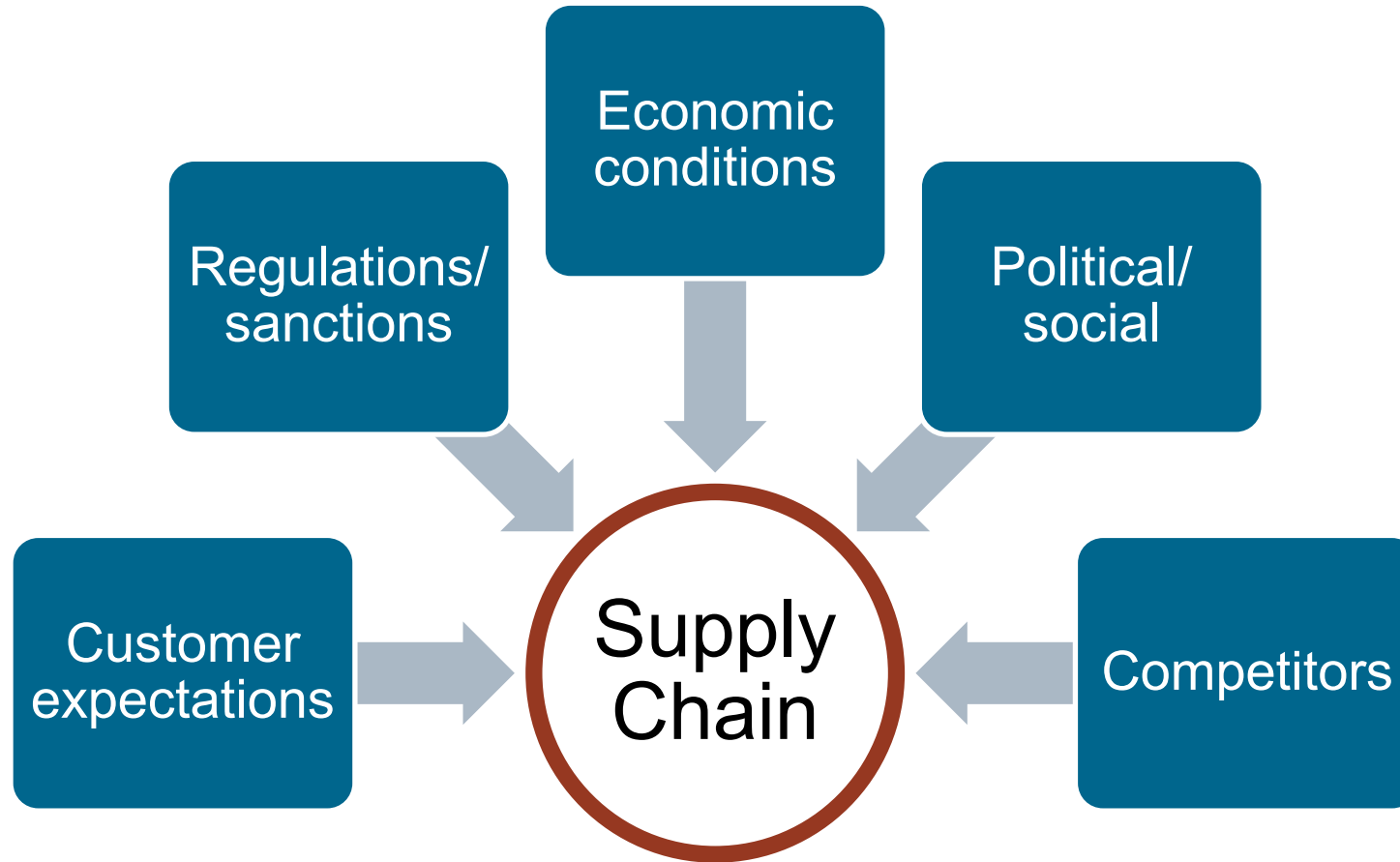
## Section A Learning Objectives

- Supply chain and external influences
- How manufacturing planning and control (MPC) fits in the supply chain
- Critical requirements for successful business strategies
- Process used in strategic planning and management
- Corporate mission, vision, and values
- Levels of strategy

# Supply Chain and MPC Overviews

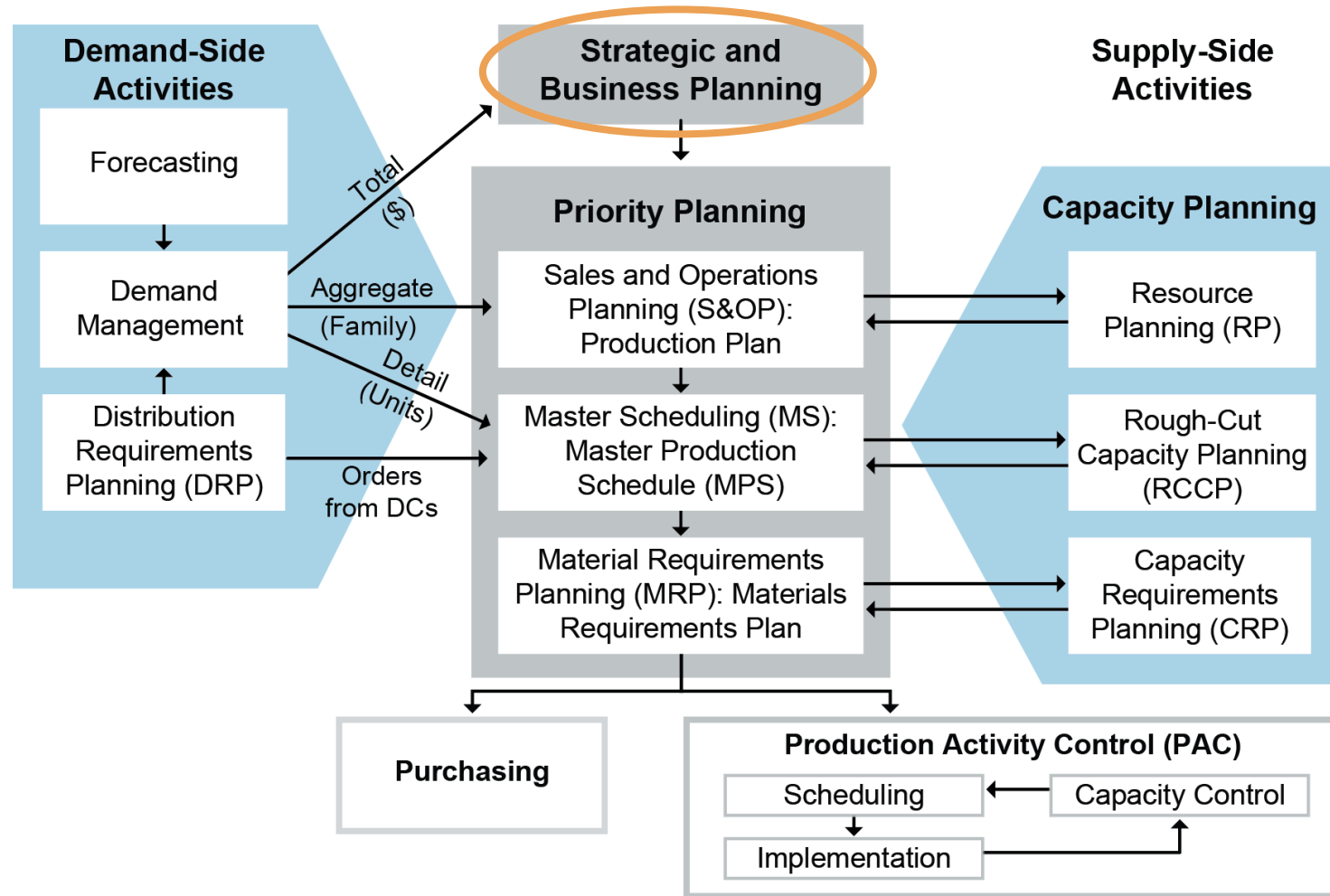


## External Environmental Influences

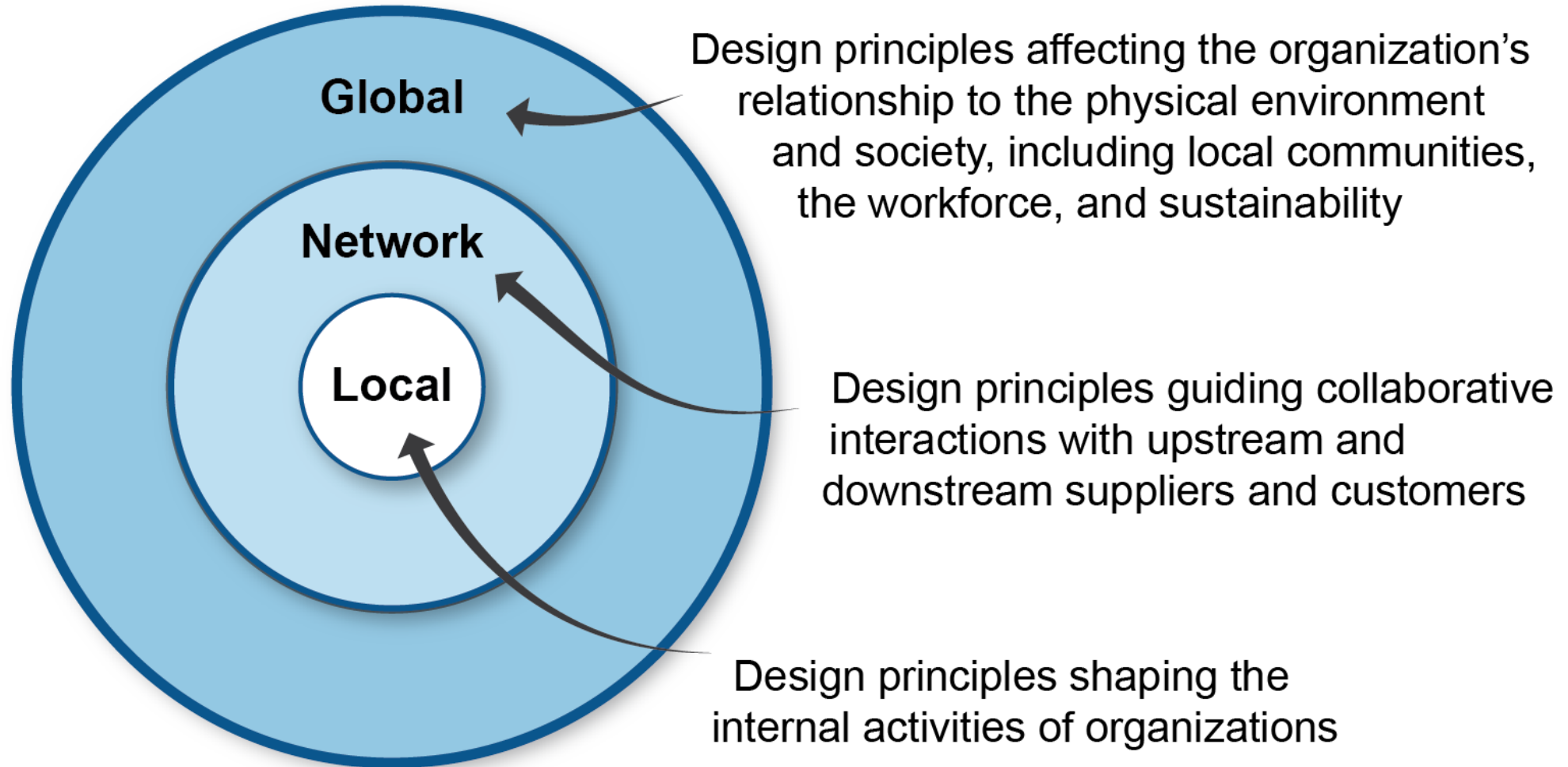


# Supply Chain and MPC Overviews

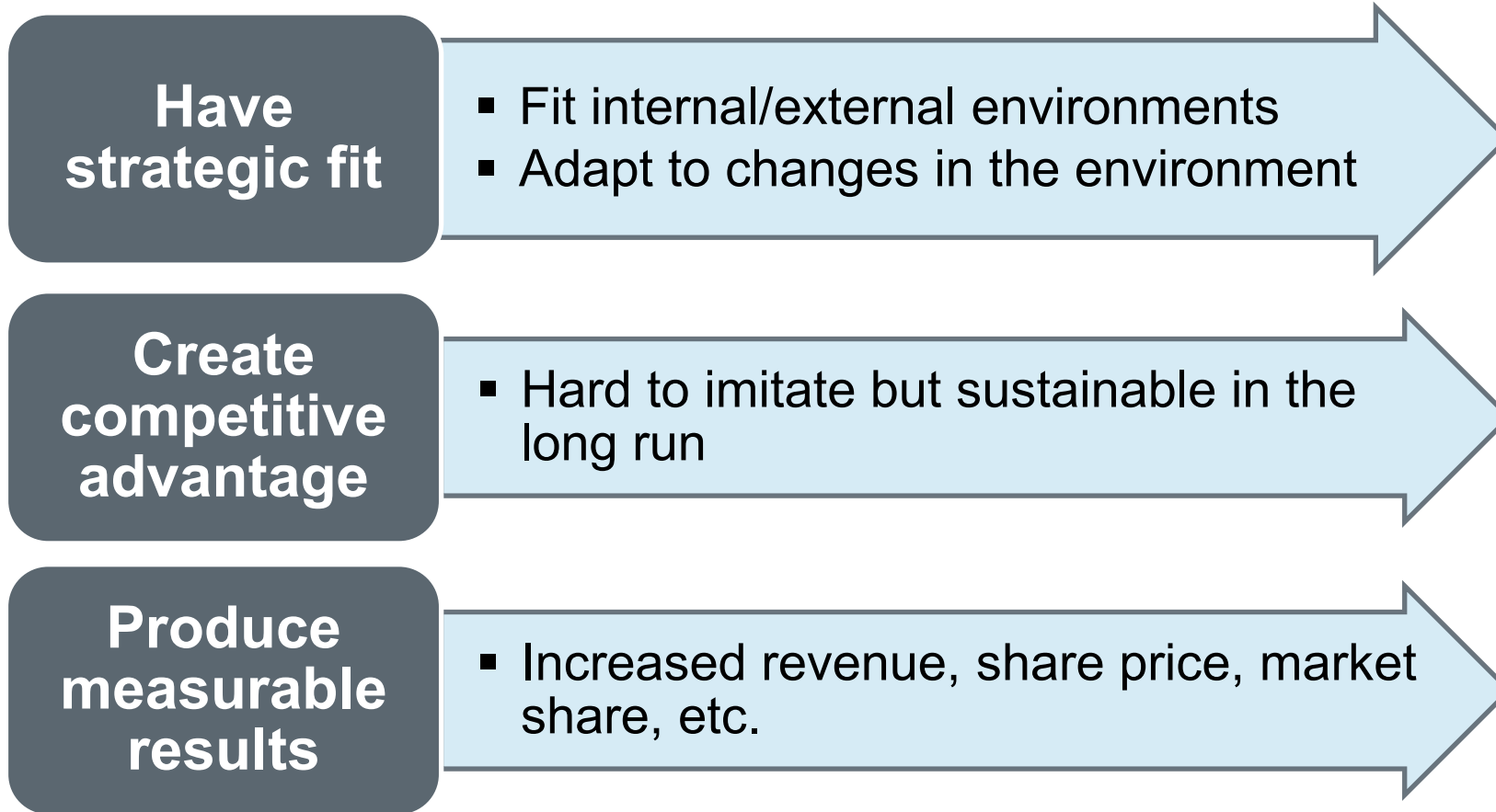
## Strategic and Business Planning Directs Manufacturing Planning and Control



## Global, Network, and Local Strategic Design Principles



## Well-Crafted Business Strategies



## Strategic Planning and Management Process

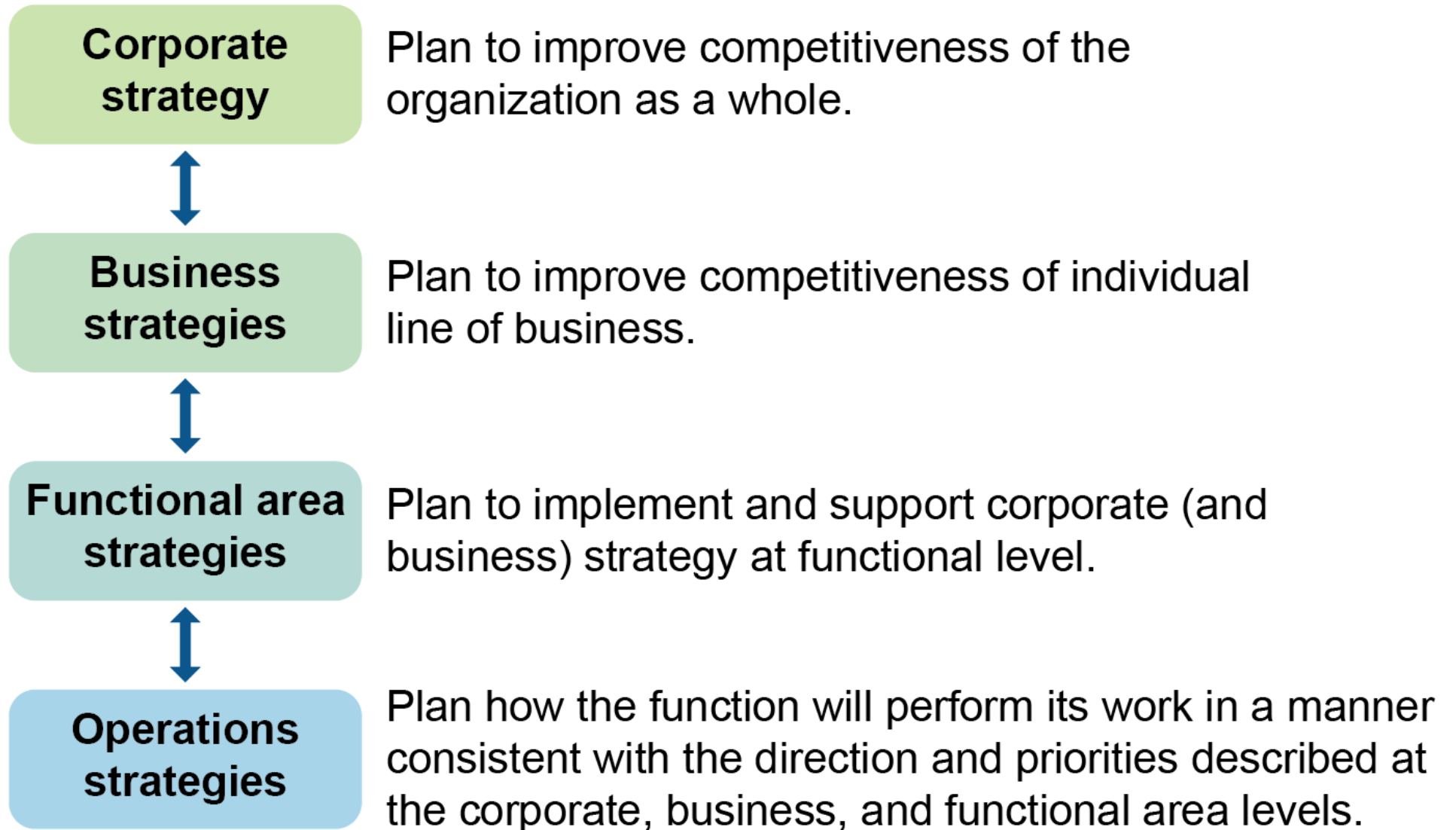


## What Is Strategy?

- A plan to use the organization's resources to achieve a sustainable competitive advantage
- How the organization
  - Will function and compete in its environment
  - Satisfy customers
  - Grow the business
  - Manage itself
  - Develop its capabilities
  - Achieve its financial objectives

# Strategy Overview

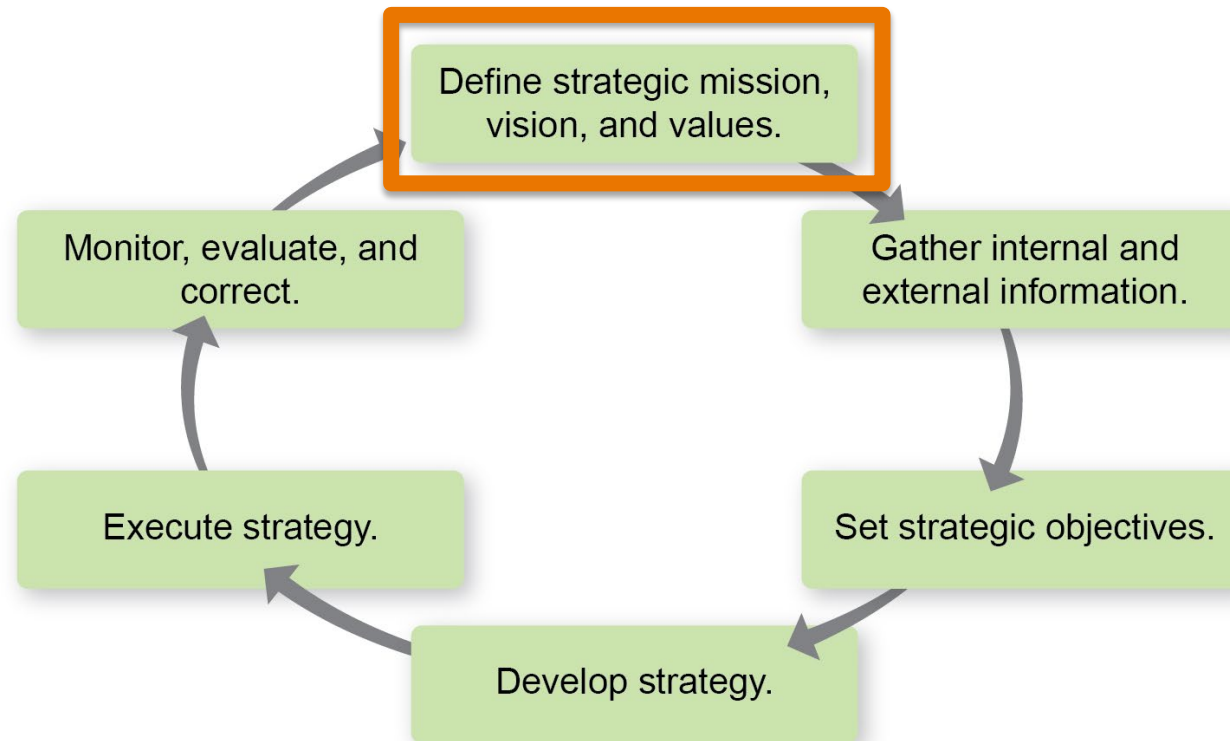
## Strategy Hierarchy



# Mission, Vision, and Values

## Mission, Vision, and Core Values

Mission	Vision	Core Values
Overall goals within business scope	Shared future perception of what the organization wants to become	Organizational guide for all business and ethical decisions and culture



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## **SECTION B: ENVIRONMENT ANALYSIS AND STRATEGIC SCOPE**

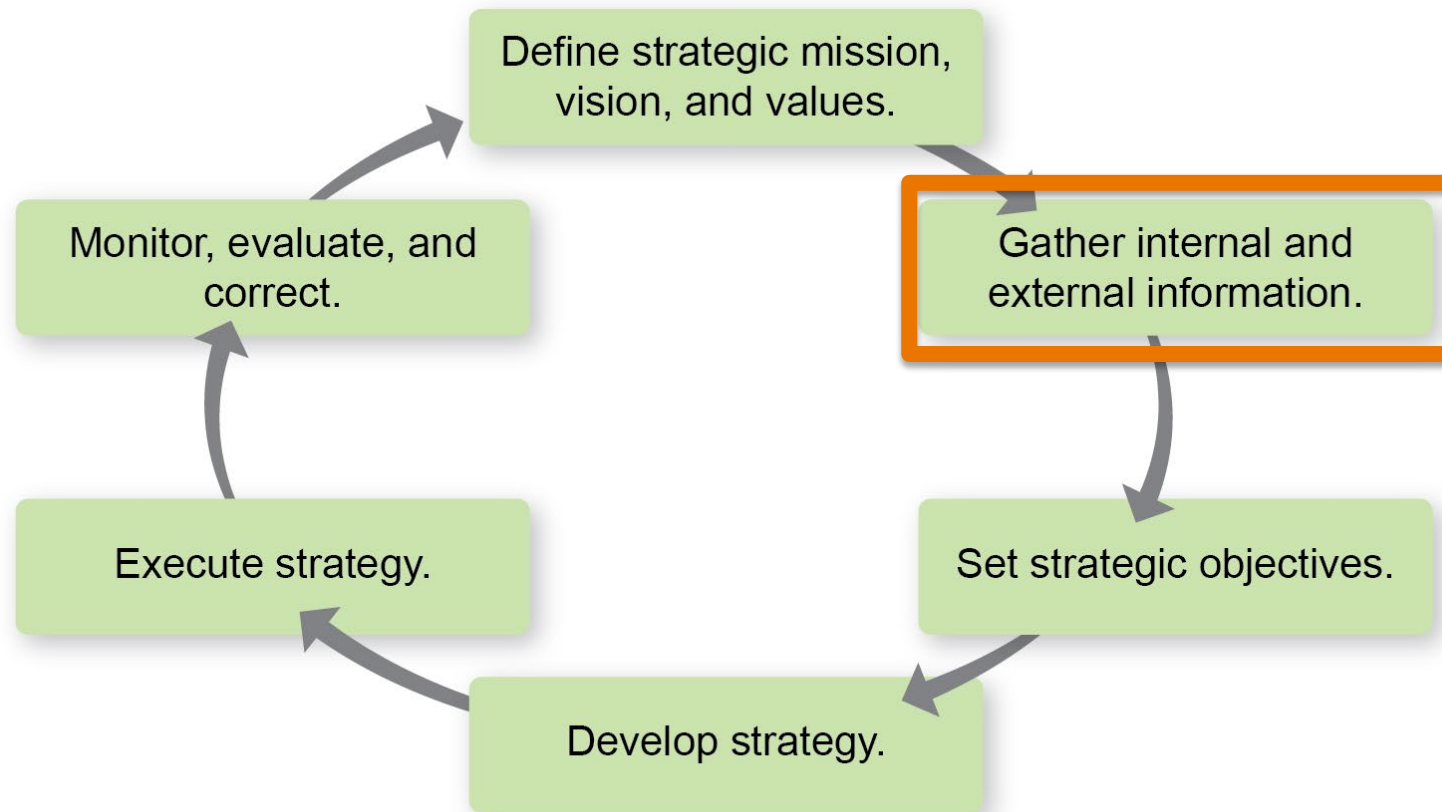
## Section B Learning Objectives

- Tools used to understand organization's internal and external environments
- Strategies to increase scope (horizontal and vertical integration, diversification, expansion/globalization)
- Drivers, pros, cons, and risks for different types of strategies
- Generic performance objectives: quality, speed, dependability, flexibility, and cost

# Analyzing the External Environment

## Environmental Scanning

Process used to expose an organization's potential strengths, weaknesses, opportunities, and threats.



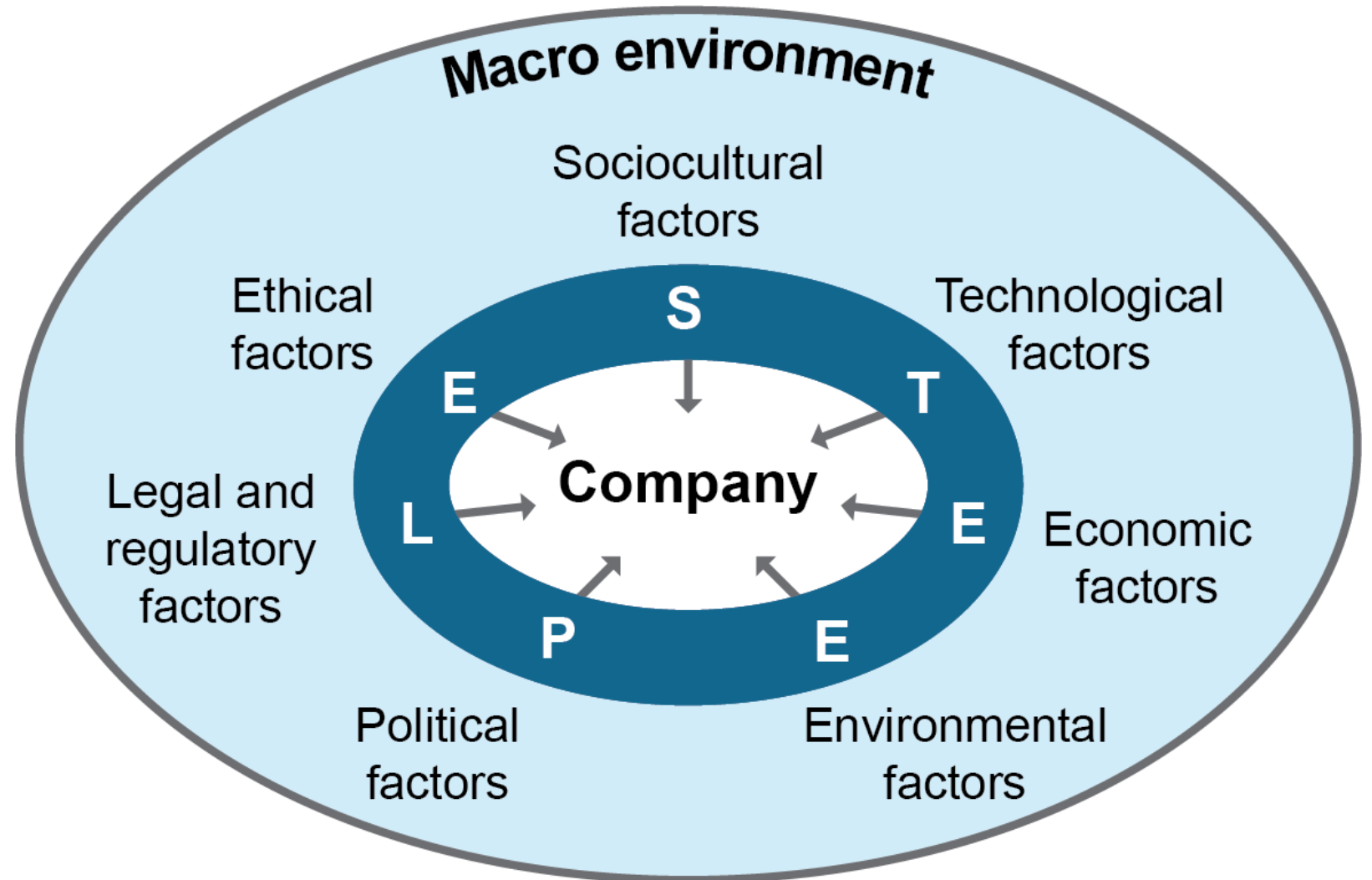
# Analyzing the External Environment

## Relevant Industry Information

- Strategic benchmarking
- Competitive analysis
  - Who are major competitors?
  - Where and how do they compete?
  - How aggressively do they compete?
  - What have they done in the past when challenged?
- Opportunities for alliances
- Trends shaping the industry
- Key success factors observed in strong competitors

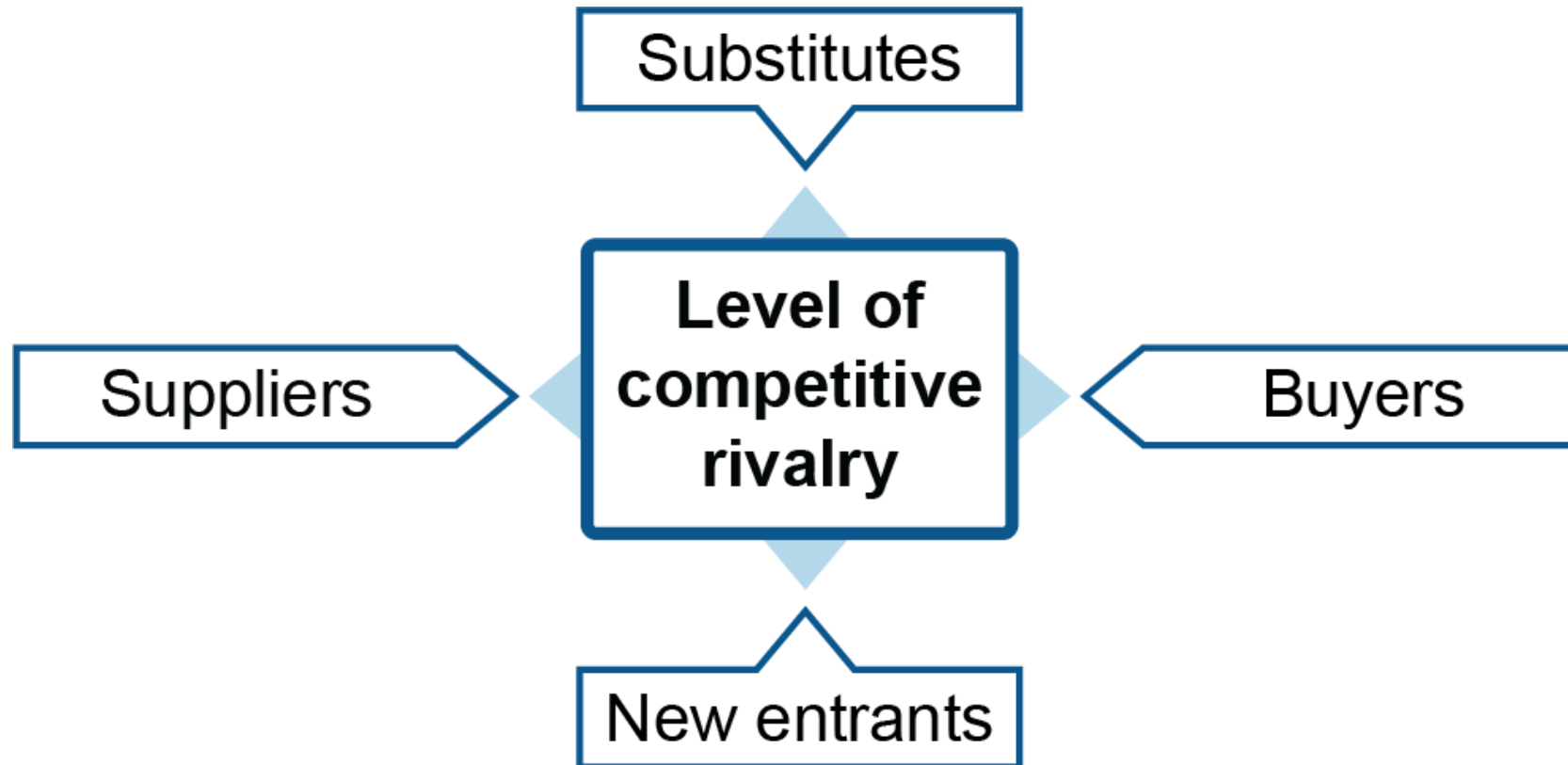
# Analyzing the External Environment

## STEEPLE Analysis of Forces in External Environment



# Analyzing the External Environment

## Five Forces Framework



## Rivalry Among Competitive Sellers



### **Stronger force**

- Slow/declining demand
- Similar products
- Excess supply/capacity
- Diverse strategies
- Strong exit barriers

### **Weaker force**

- Stable/increasing demand
- High switching costs
- Supply and demand usually balanced
- Dominance by a few strong rivals
- Tendency to copy strategies
- Easy to withdraw (e.g., sell assets)

## Threat of Entry



### **Stronger factor**

- Industry growth promising
- Lax regulation
- New technologies possible to lessen power of incumbents
- Little customer loyalty

### **Weaker factor**

- Incumbents that can and will react aggressively
- Technology controlled by incumbent patents
- High barriers (e.g., capital costs, locations, networks)
- High loyalty to brand and/or supplier

## Substitute Products from Other Industries

Warning signs include

- Possible substitute has a better growth trend than products in the analyzed industry
- Signs that makers of substitutes are increasing capacity
- Evidence that these makers are enjoying better profit margins.

## Relative Bargaining Power of Suppliers and Buyers

### Suppliers have greater power when

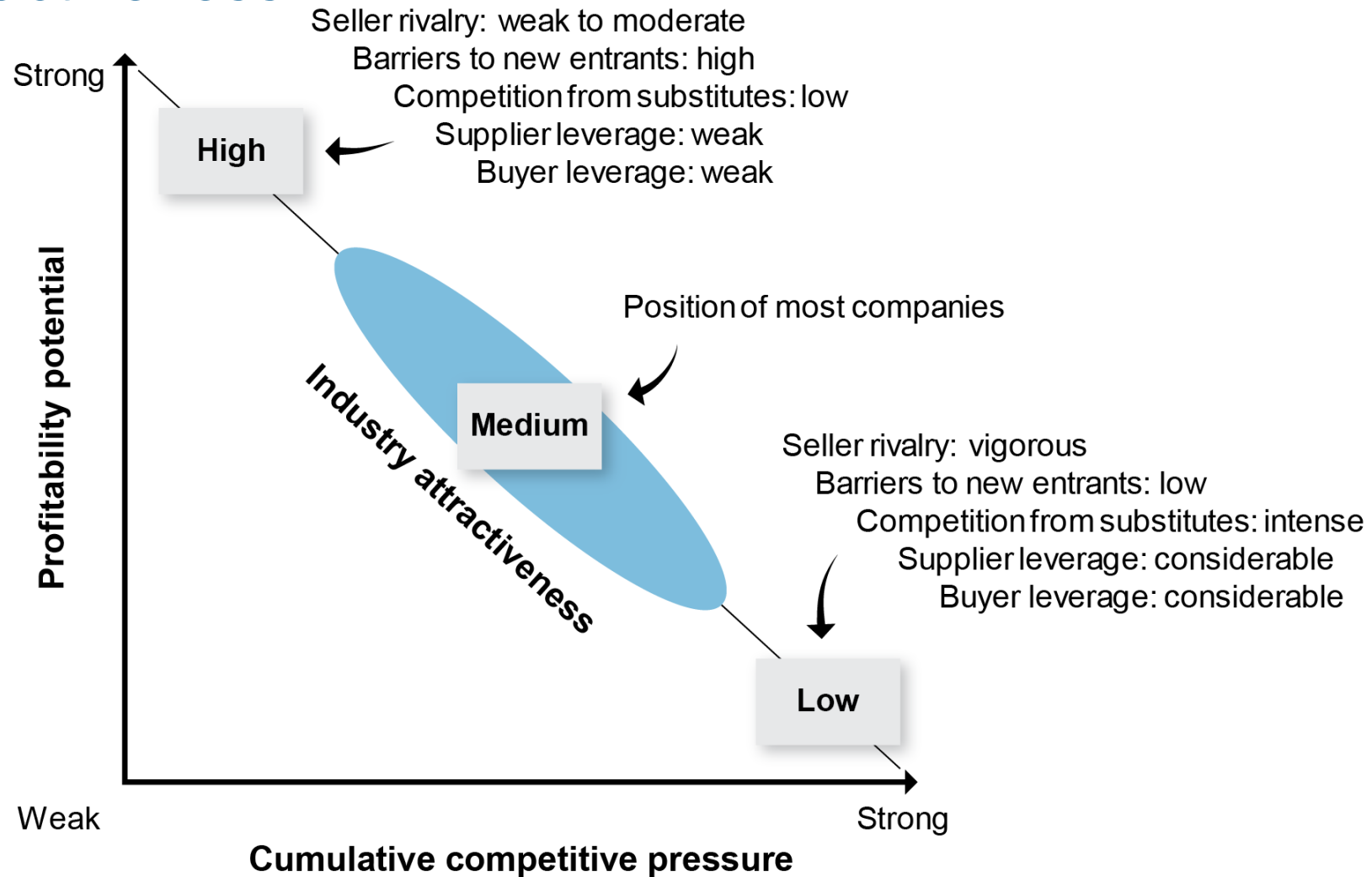
- High demand, low supply
- Item has added value
- High switching costs
- Buyers cannot make it themselves
- Minor part of buyer's costs
- Few acceptable substitutes
- Buyer is minor part of supplier's revenue

### Buyers have greater power when

- Weak demand, high supply
- Commodities
- Low switching costs
- Few buyers, many suppliers
- Buyers can make
- Buyers know item's costing
- Buys can be delayed
- Buyer is price-sensitive

# Analyzing the External Environment

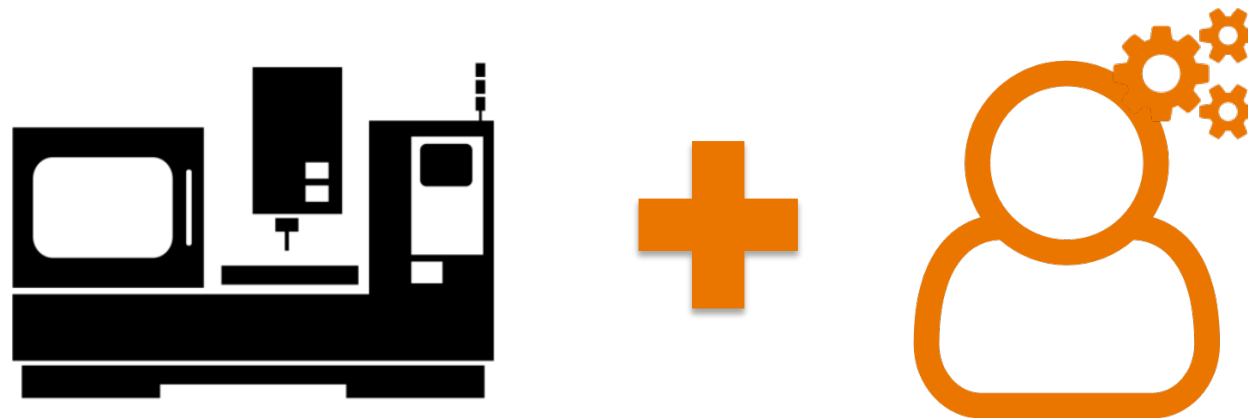
## Industry Attractiveness



# Analyzing the Internal Environment

## Resource and Capability Analysis

- Resource: “Anything that adds value to a good or service in its creation, production, or delivery”
  - Tangible and intangible
- Capability: What skill, knowledge, or ability is required to convert resources into value



# Analyzing the Internal Environment

## VRIN Test

### **Valuable**

And relevant to the strategy

### **Rare**

Something you have and  
rivals lack

### **Inimitable**

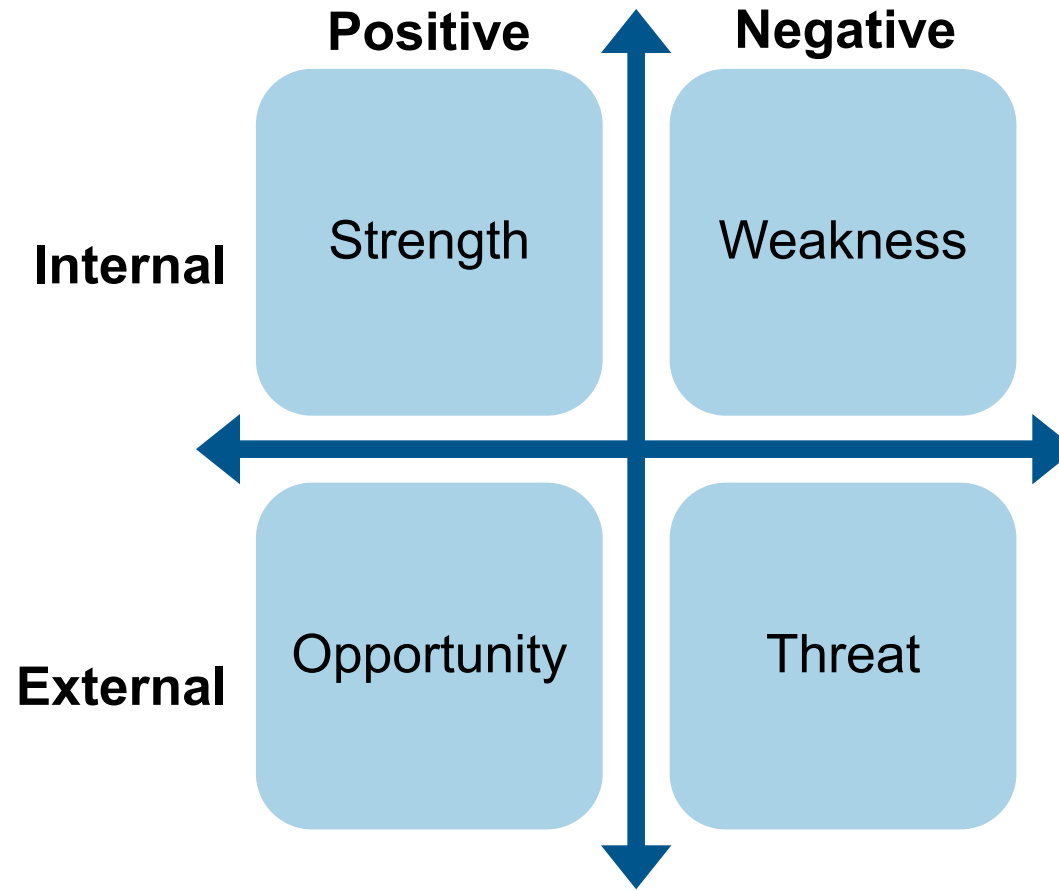
Providing a period of  
uncontested superiority

### **Nonsubstitutable**

Superior to other possible  
approaches

# Analyzing the Internal Environment

## SWOT Analysis

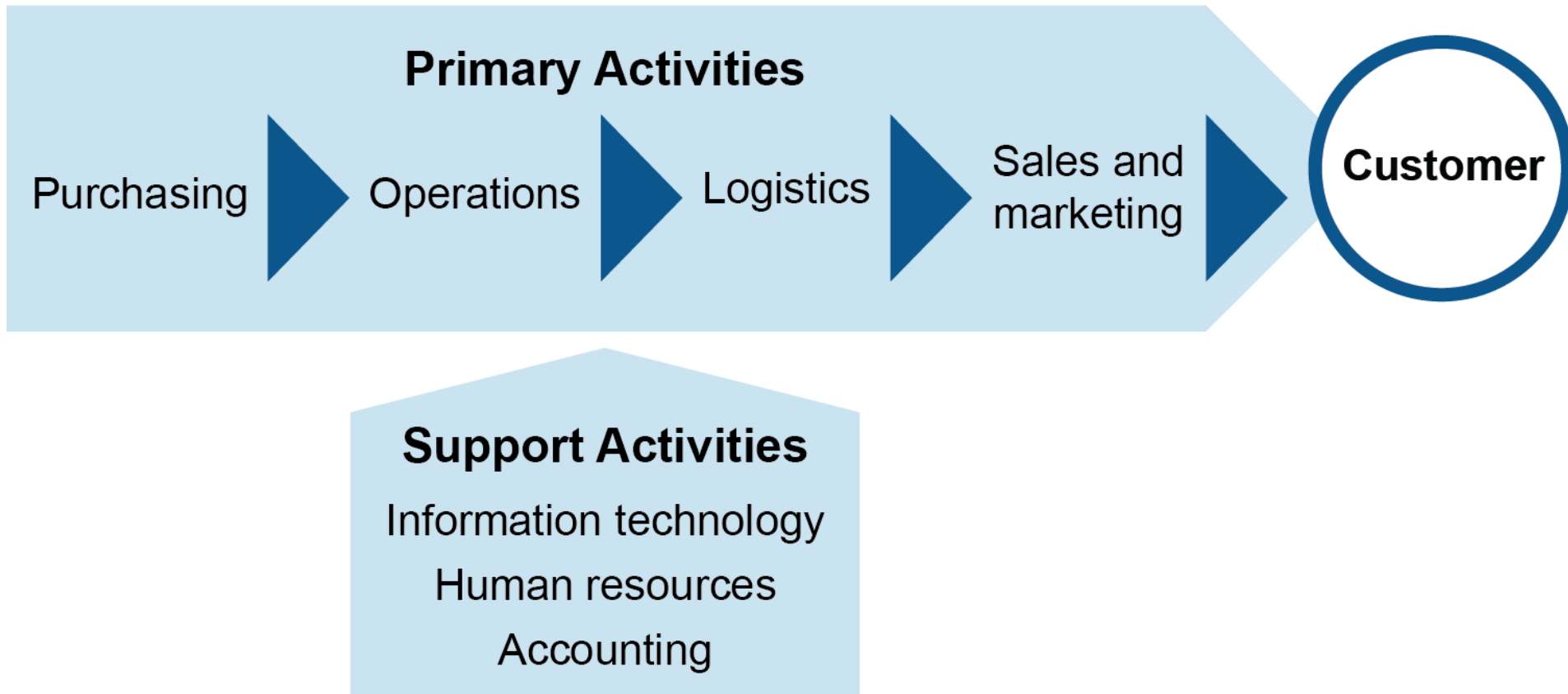


## SWOT Analysis and Strategy

- Strategies should be checked to see if the organization has the necessary strengths.
  - If not, the organization should change course or commit to developing the resources and capabilities.
- Opportunities should be assessed against the organization's ability to exploit the opportunity.
  - Can it leverage unique strengths? How can it mitigate threats? Through self-development or alliances?

# Analyzing the Internal Environment

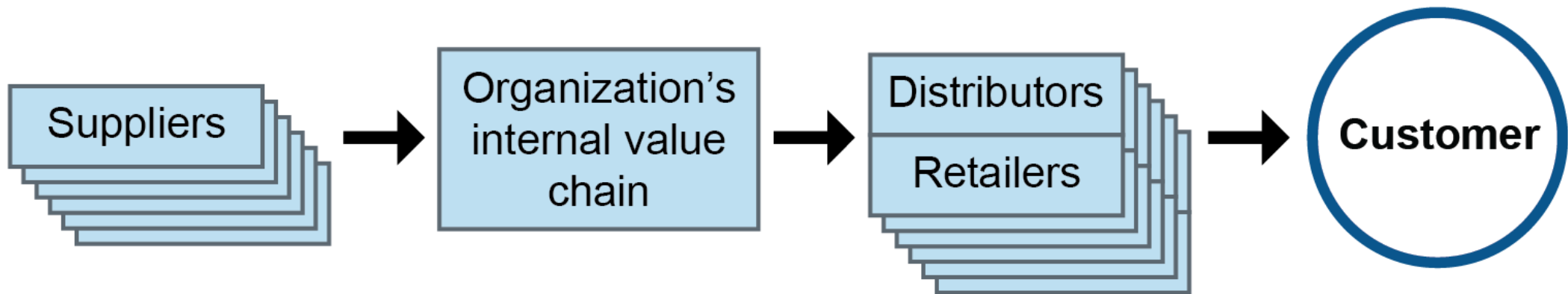
## Value Chain Analysis: Internal Value Chain



# Analyzing the Internal Environment

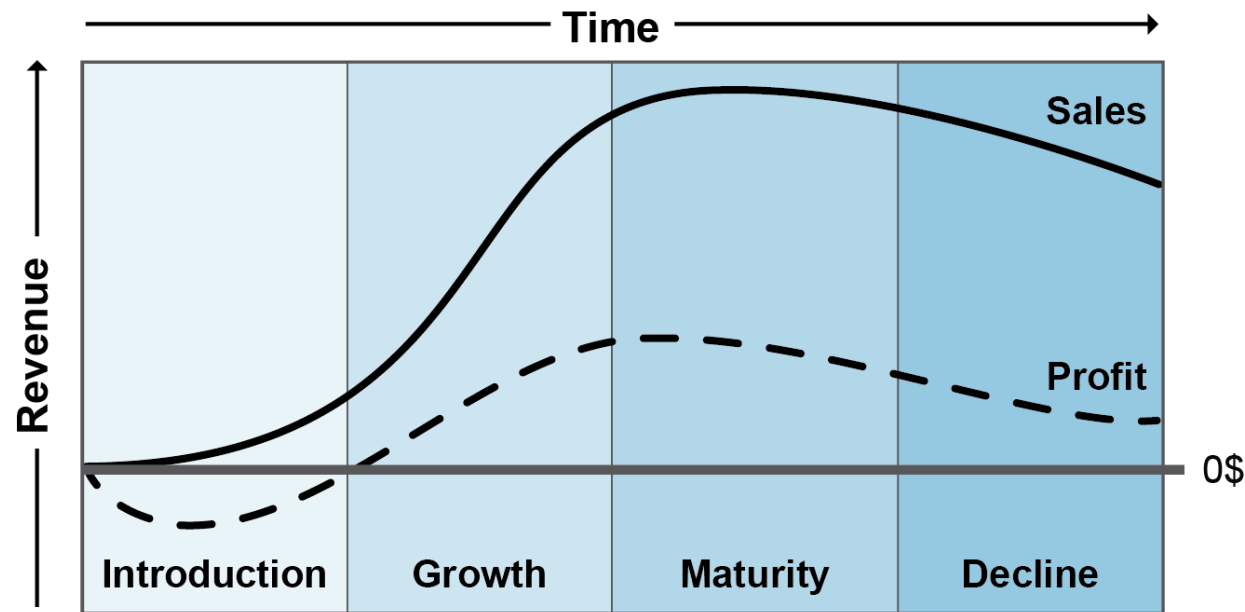
## Value Chain Analysis: Value Chain System

- Includes upstream and downstream trading partners—suppliers, distributors, dealers, retailers.
- Value chain analysis examines effects of all the supply chain links on costs and profits.



# Analyzing the Internal Environment

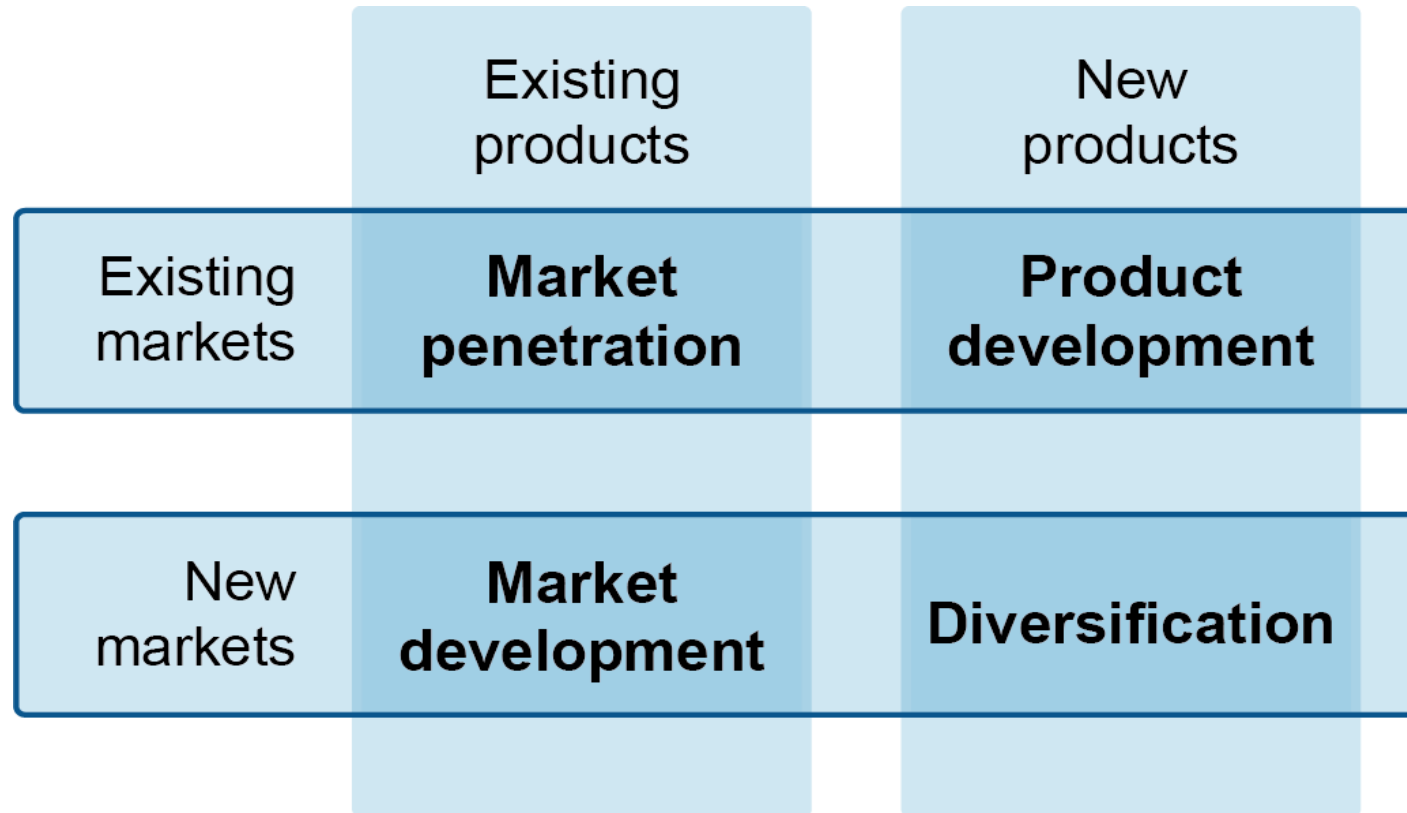
## Product Life Cycle Analysis



ETO	●			
MTO	●	●	●	●
ATO		●	●	●
MTS	●	●	●	

- A product's position in its life cycle impacts strategy.
- Short life cycle: maximize revenue generation quickly.
- Positions in life cycle will affect capacity decisions.
- Operations performance objectives may be weighted differently in different phases.

## Ansoff Product-Market Growth Matrix



## Diversification Strategies: Scope/Market Expansion

### **Diversification can be an effective strategy when**

- Current markets or profitability are declining
- Investing in new lines of business can increase the firm's value and resilience.

### **Diversification can increase risk, however, from**

- Unfamiliarity of new industry
- Inaccurate analysis of value and risks of the move
- Ineffective restructuring of the organization's new lines or divisions.

## Related and Unrelated Diversification Strategies

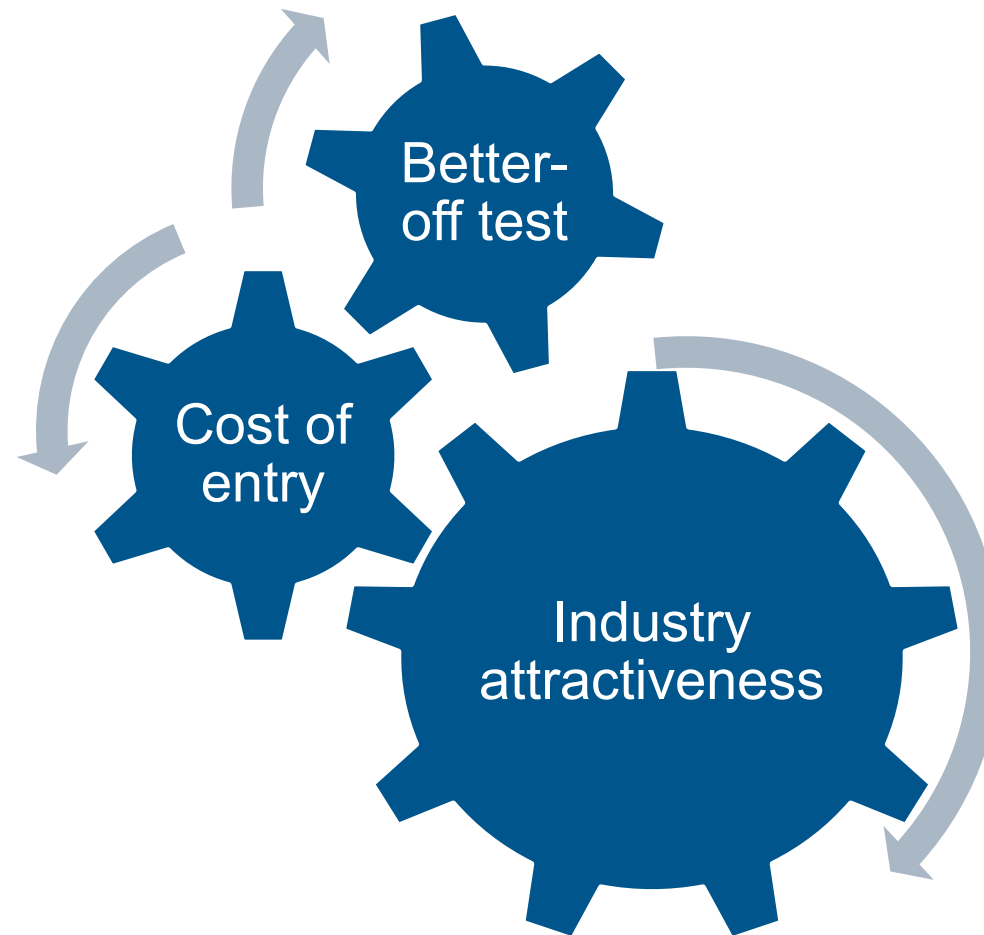
### Related diversification

- Growth outside current market or industry, based on similarities between new and current value chain activities.
- Leverage brand recognition.
- Shared capabilities enable economies of scale.

### Unrelated diversification

- Growth in markets or industries with different value chain systems.
- Corporate investment.
- Does not provide opportunities for synergy.

## Assessing Diversification Opportunities



## Industry Attractiveness/Competitive Strength Matrix

Industry attractiveness	High	<b>Growing market size</b> <b>Good profit margins</b> <b>Little competitive pressure</b>		<b>Weak competitor (old technology, poor management) in strong industry</b>
	Medium			
	Low	<b>Revenue down in segment</b> <b>Strong brand</b> <b>Acceptable profits</b>		<b>Profits down industry-wide</b> <b>Weak brand</b> <b>Arrogant management</b>
		<b>Strong</b>	<b>Average</b>	<b>Weak</b>
		<b>Business unit competitive position</b>		

## Global Expansion

### Globalization

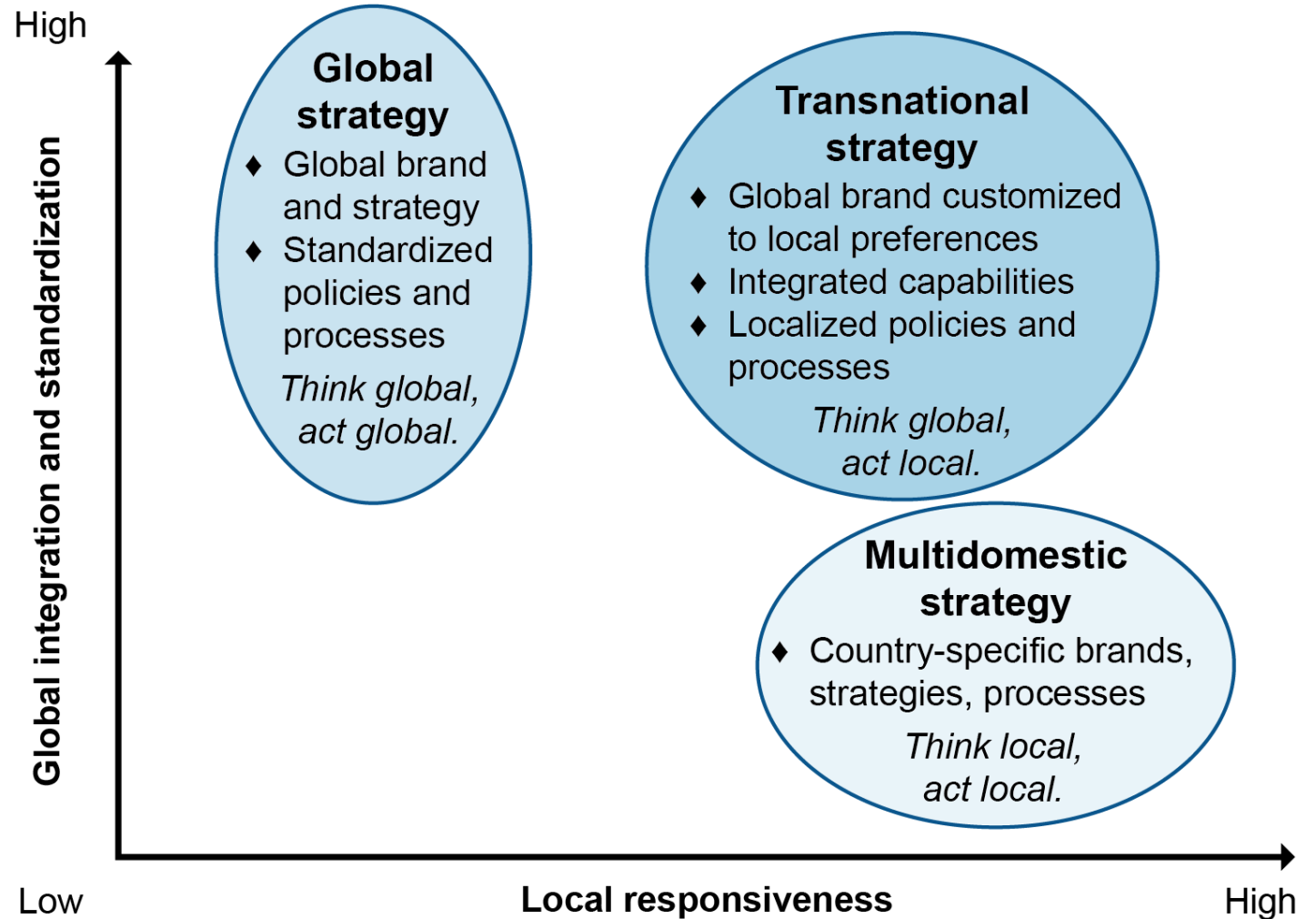
- Grow by expanding market beyond current geographical borders, horizontally or vertically

### Drivers for globalization strategies

- Saturated or mature domestic markets
- Opportunity to lower costs of production and improve competitive power
- Avoiding negative pressures in home market (e.g., regulation, currency value)

# Strategic Scope

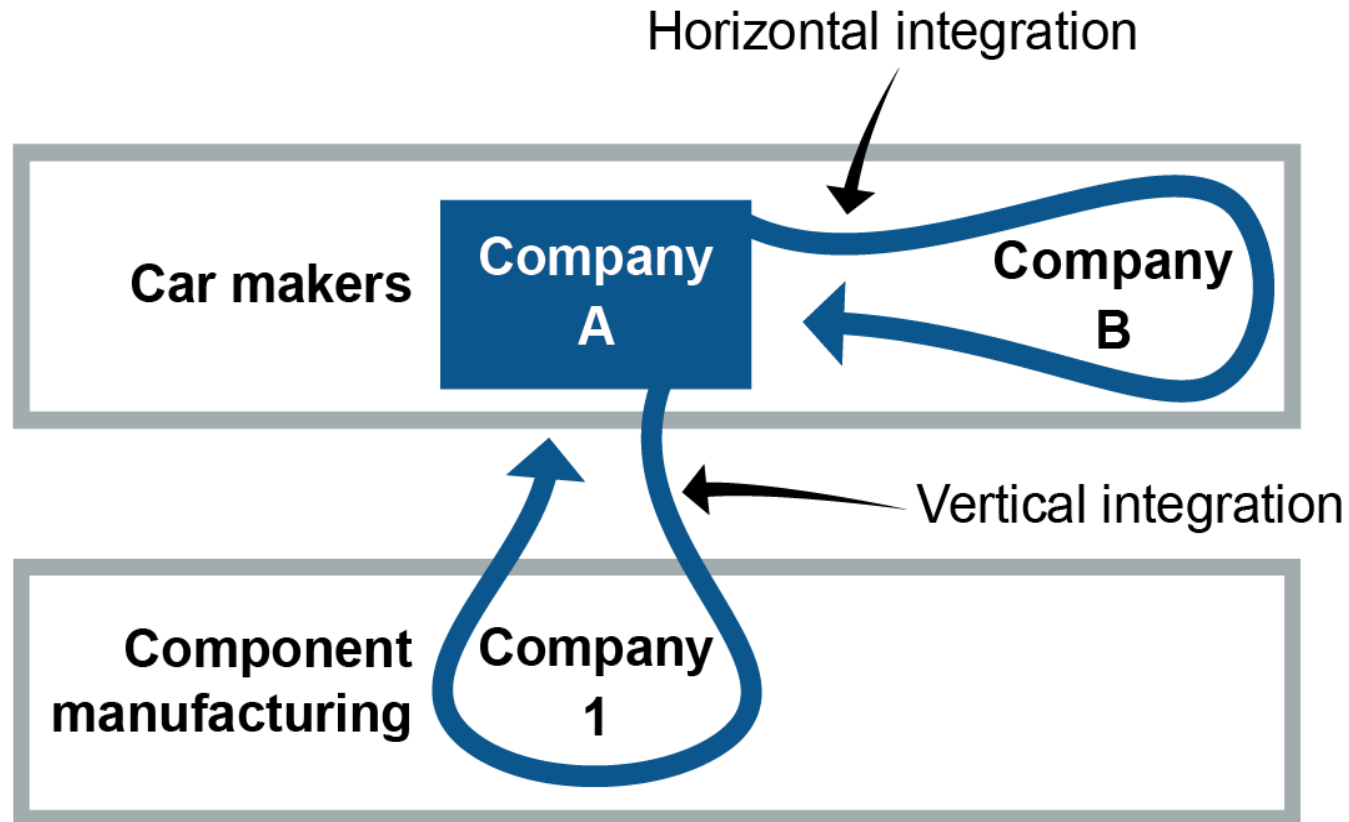
## Types of International Strategies



## Multidomestic Versus Global Strategy Exercise

Makers of...	Recommended Strategy	Reasons and Assumptions
Personal computers	Global	<ul style="list-style-type: none"><li>▪ Global importance of brand name</li><li>▪ Regional assembly operations: assemble-to-order or make-to-stock</li><li>▪ Economies of scale, low-cost locations, proximity to market</li><li>▪ Manufacturing excellence and mass customization capability</li></ul>
Soups	Multidomestic or transnational	<ul style="list-style-type: none"><li>▪ Significant differences exist in local market preferences, brand still important.</li><li>▪ In small markets, consider outsourcing to third party, or supply through regional operations in low-cost locations.</li><li>▪ Consider licensing in mid-size markets with tight control of branding.</li><li>▪ Consider full operations (joint ventures) in large markets.</li></ul>

## Horizontal and Vertical Integration



## Paths to Horizontal Growth

Develop new capabilities  
in-house.

Acquire new capabilities  
(e.g., merger or  
acquisition).

Outsource a capability  
(e.g., logistics manager or  
third-party logistics  
provider).

## Vertical Integration

### Definition of vertical integration

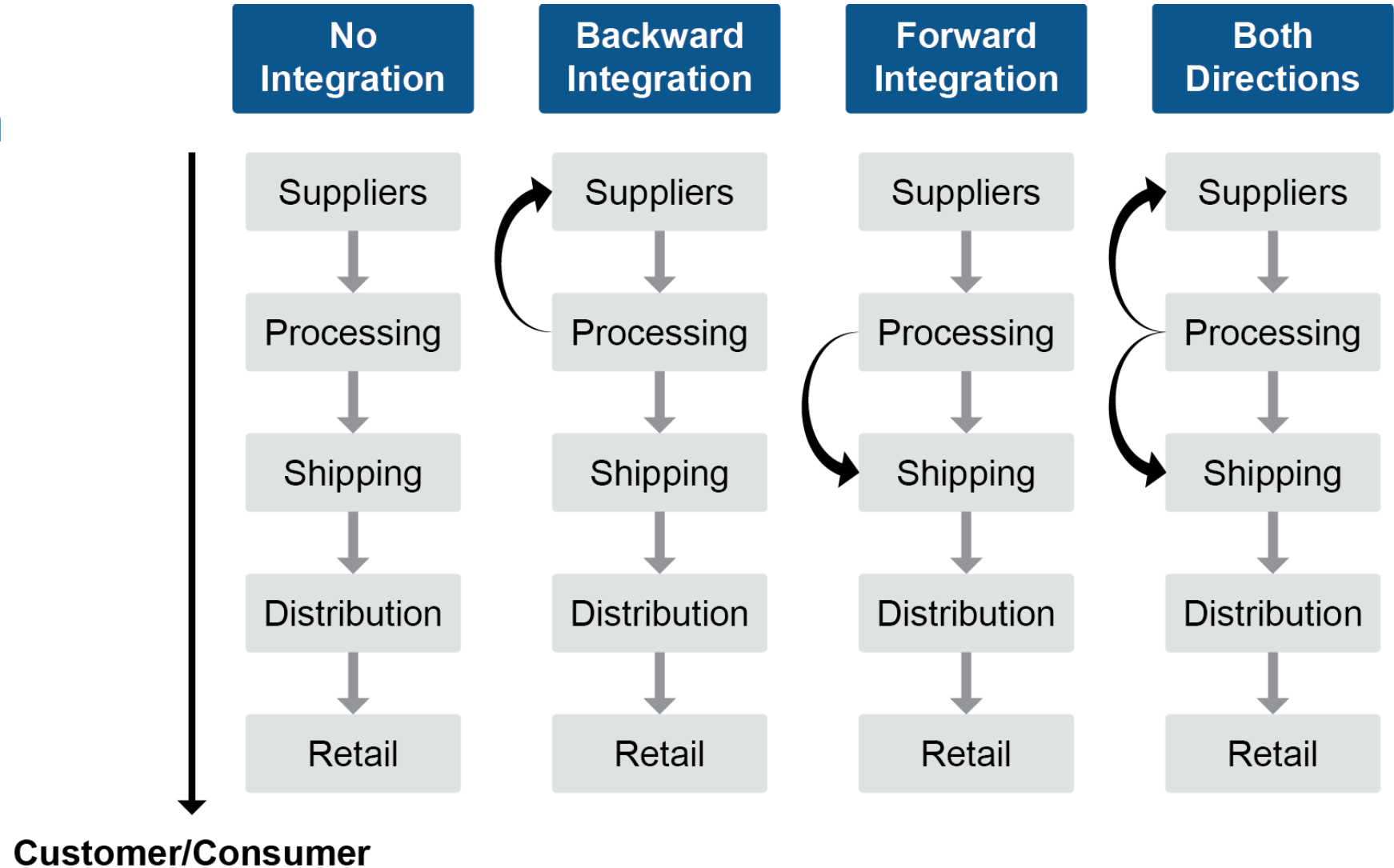
- “Degree to which a firm has decided to directly produce multiple value-adding stages...
- The more steps in the sequence, the greater the vertical integration.”

### Vertical integration challenges

- Difficulty in mastering new technology, knowledge, skills
- Increased risk caused by changes in industry practices
- Uncertain cost efficiency advantages
- Capacity imbalances

# Strategic Scope

## Backward and Forward Integration



## When Does Backward/Forward Integration Make Sense?

Backward  
integration

- Organization can make it with at least as much efficiency, reliability, and quality.
- Adds risk by focusing outside core competencies.

Forward  
integration

- An organization gains more control over distribution and sale of their goods.
- Can be monopolistic or create ill will with current distributor network.

## Mergers and Acquisitions (M&A)

### Definition of merger

- “Acquisition of the assets and liabilities of one company by another”

### M&A objectives

- Create cost efficiencies.
- Expand geographical coverage.
- Extend product offerings.
- Gain access to technology, resources, or capabilities.
- Support organization’s adaptation to industry evolution.

## Outsourcing For Horizontal Integration

“Process of having suppliers provide goods and services that were previously provided internally...replacement of internal capacity and production”

- Adds activities to value chain with fewer risks than ownership.
- Can it be performed more cheaply and quickly with at least equal quality?
- Core competencies should not be outsourced.
- Includes various types of partnerships/alliances.

# **CPIM** CERTIFIED IN PLANNING AND INVENTORY MANAGEMENT

## **SECTION C: DEVELOPING AND MANAGING STRATEGY AT VARIOUS LEVELS**

## Section C Learning Objectives

- Order qualifiers and winners
- Generic business strategies:
  - Low-cost provider
  - Differentiation
  - Focused low-cost provider
  - Focused differentiation
  - Best-cost provider
- Blue ocean strategy
- For each strategy:
  - Impact on organization
  - Under what conditions it may be effective
  - Risks the organization should prepare to face
- Make-or-buy decision
- Number and size of sites
- Entering foreign markets
- Execute and change strategy

# Order Qualifiers and Winners

## Order Qualifiers, Winners, and Push/Pull

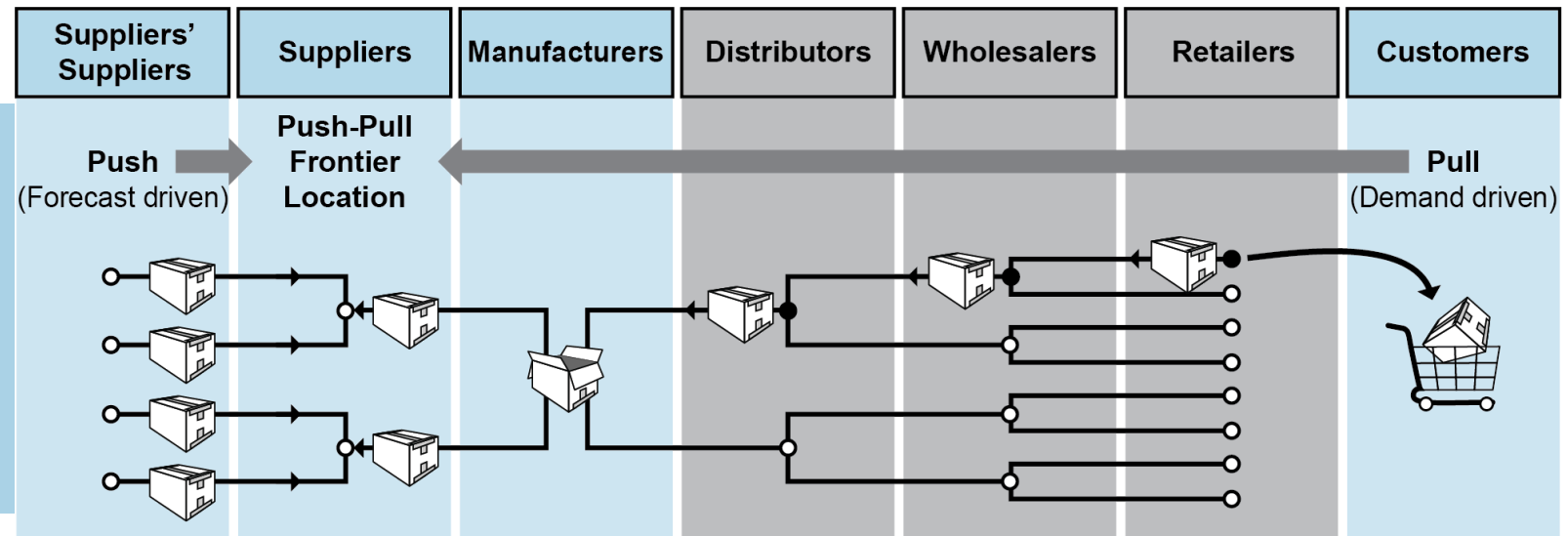
### Order qualifiers

- What a firm must exhibit to be a viable competitor.
- Winners tend to become qualifiers over time.

### Order winners

- What causes a customer to choose a firm over its competitors.

Order winners and qualifiers plus the location of the push/pull frontier are two of the strongest manufacturing environment determinants.



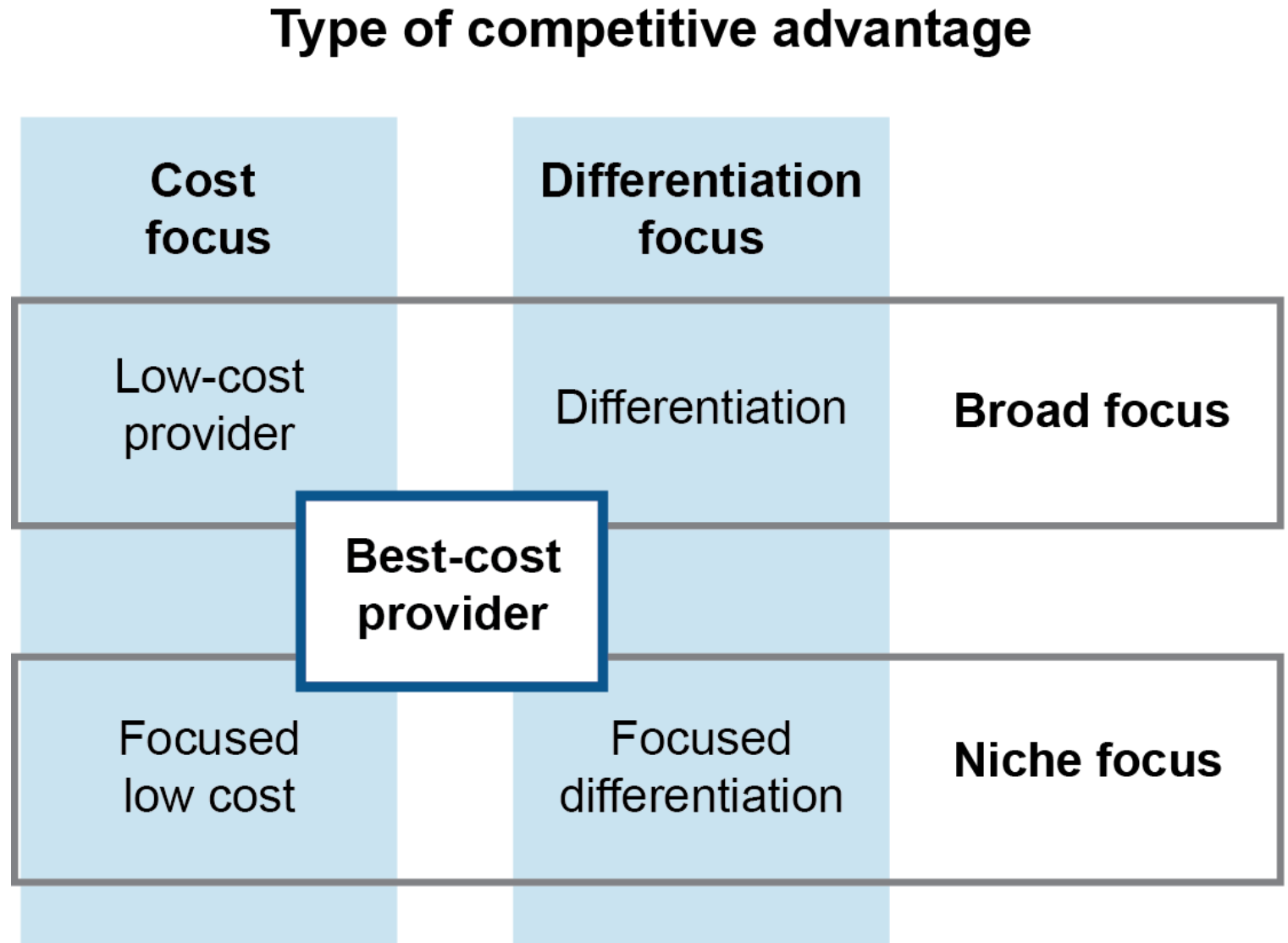
## Product Profiling and the Product Life Cycle

Compare manufacturing capabilities to order-winning criteria

Life Cycle Phase	Customer Type	Qualifiers	Winners
<b>Introduction</b>	Innovators	Quality, flexibility	Meet actual specifications
<b>Growth</b>	Early adopters	Cost, flexibility	Dependability
<b>Maturity</b>	Most of market	Quality, flexibility (product range)	Cost, dependability
<b>Decline</b>	Replacements or late adopters	Dependability	Cost

# Generic Strategies

## Porter's Generic Competitive Strategies



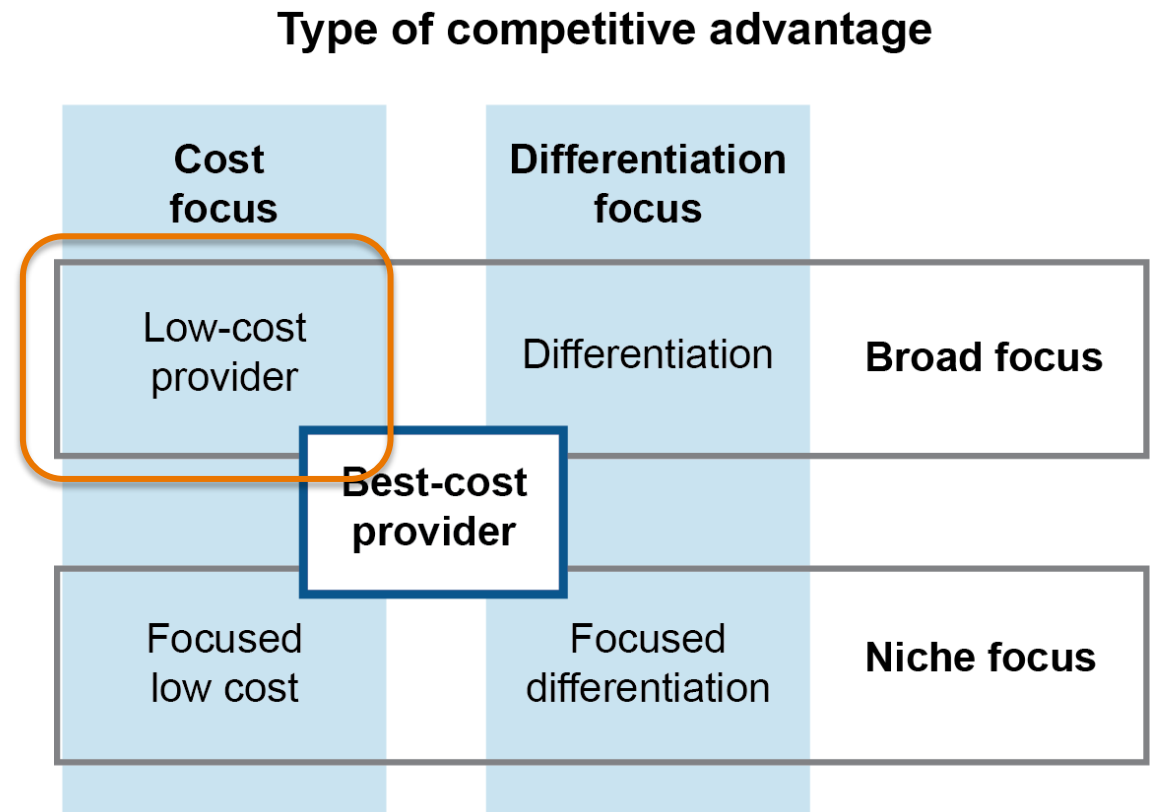
## Competitive Strategies

- It is possible for divisions within an organization to have different strategies.
- But implementing two strategies simultaneously within a single entity (e.g., division) is challenging.
- The choice of strategy involves tradeoffs.

# Generic Strategies

## Low-Cost Provider Strategy

- Value based on lower or lowest price vs. competitors
- Paths to profit:
  - High volume to generate profit
  - Lower volume/higher profit margin
- Tactics:
  - Reduce features and/or quality
  - Reduce costs of production



## Low-Cost Provider Tactics and Risks

### Additional tactics

- Capture economies of scale.
- Omit needless processes.
- Focus on improvement and waste elimination.
- Utilize capacity without excess inventory.
- Lower supply chain costs.
- Negotiate for best prices.

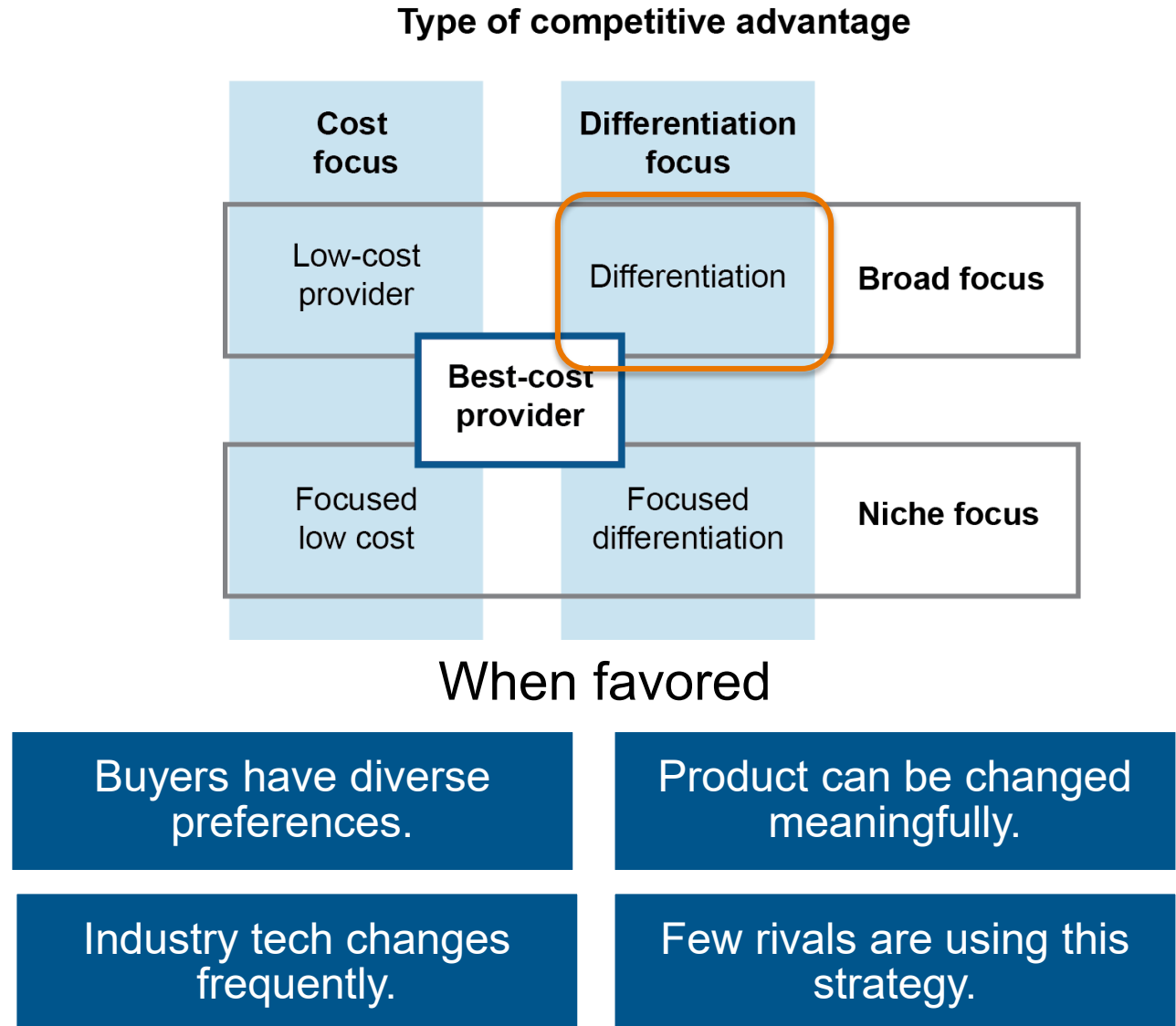
### Risks

- Erosion of profit margin as a result of price wars with competitors
- Easily imitated by rivals
- Vulnerability to sudden shifts in buyer preferences

# Generic Strategies

## Differentiation Strategy

- Communicate features and benefits rivals do not offer.
- Differentiation may vary:
  - Different capabilities (broader or more focused)
  - Level of customer service
  - Geographical area served



## Creating Differentiation and Related Risks

### Creating differentiation

- Align value chain activities with targeted needs and preferences.
  - Exploit/build a strength.
- Work with supply chain partners. For example:
  - Design processes for speed.
  - Provide services to retailers to increase quality.

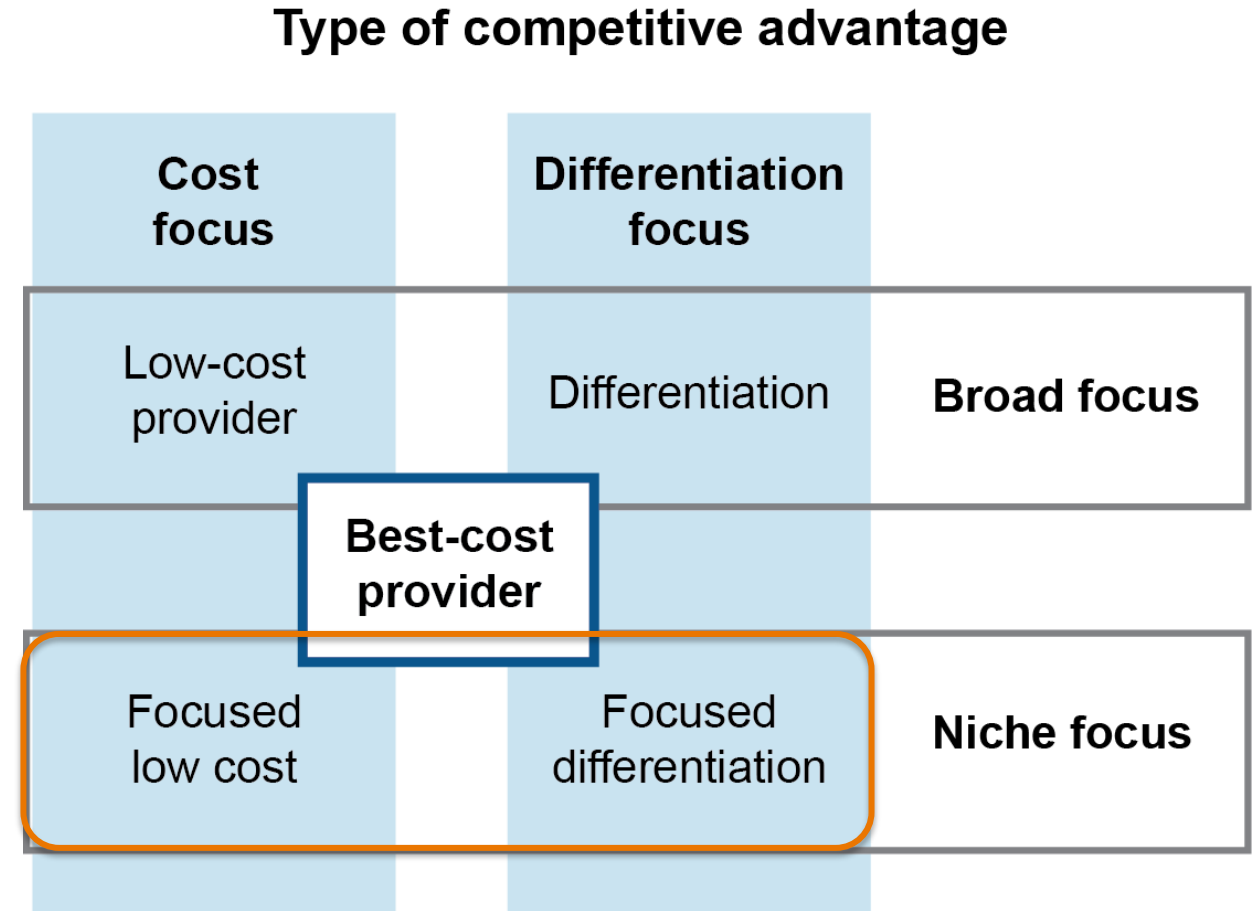
### Differentiation risks

- Sudden change in customer needs or preferences
- Misunderstanding of buyer's perception of value
- Misunderstanding costs of delivering the differentiation
- Costly differences with no additional value to buyers

# Generic Strategies

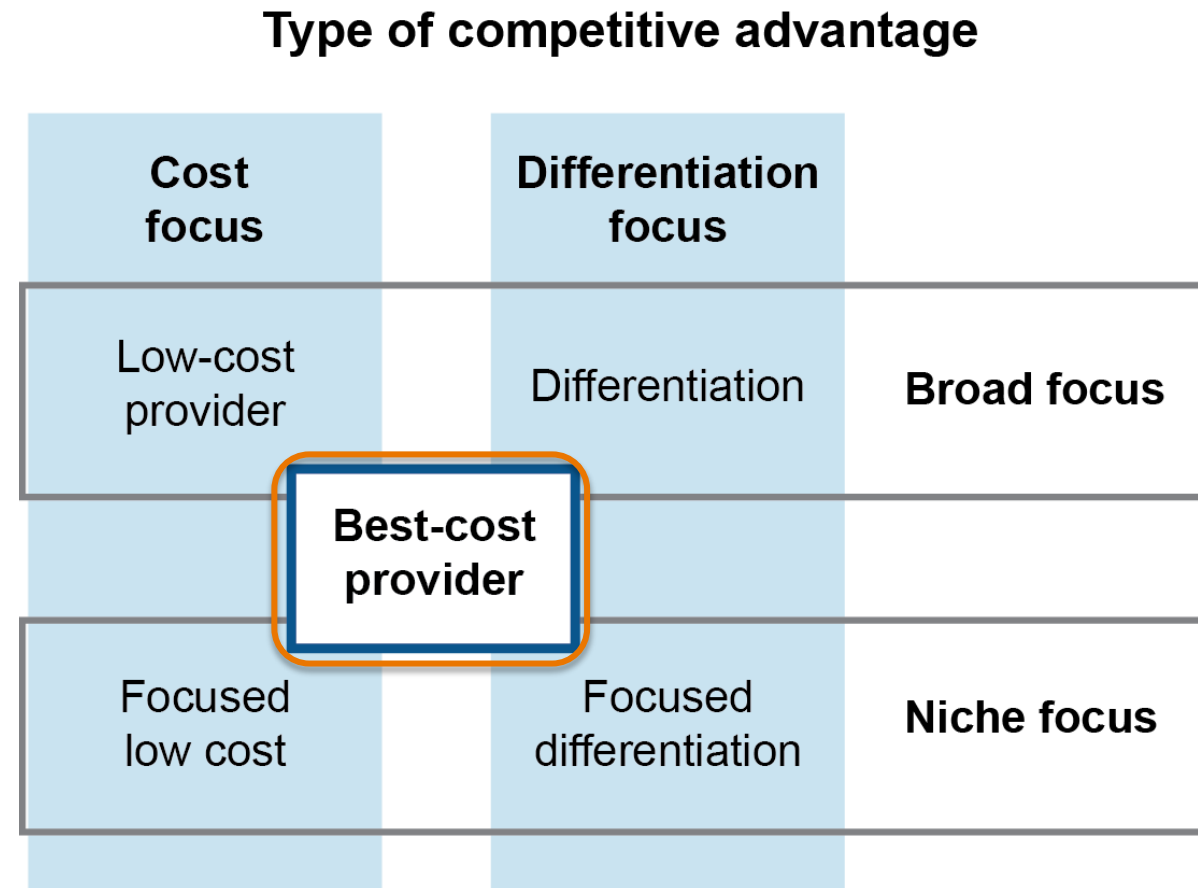
## Focus Strategies

- Low-cost or differentiation applied to market niches—limits rivals
- Favoring
  - Large enough niche to create sufficient volume and profit
  - Few large, powerful rivals
  - Hard to imitate
- Risks
  - Niche shrinks.
  - Buyer preferences change.
  - Well-funded new rival enters market niche.



## Best-Cost Provider Strategy

- Better low-cost alternative relative to competitors' offerings
- Mid-range products/services
- Must control costs and quality
- Conditions that favor
  - Value-minded buyers want quality and economy
  - Quality drops at lower prices
  - Increasing market prices
  - Good in recessions
- Risk of competitive attacks from low-cost providers and differentiated providers



## Competitive Strategy Discussion

Scipa is a branded beverage company with a relatively large national market share. Its revenues are growing slightly faster than its rivals in a mature and slow-growing market. Like its rivals, Scipa has a very large marketing program, regional bottling operations, and diverse distribution channels.

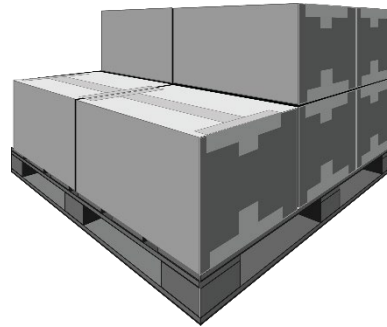
Briefly assess Scipa's competitive environment based on the industry growth rate and market life cycle for its products.

1. What are Scipa's likely competitive strategies?
2. What are the two most significant performance measures that relate to Scipa's competitive strategies, and why?

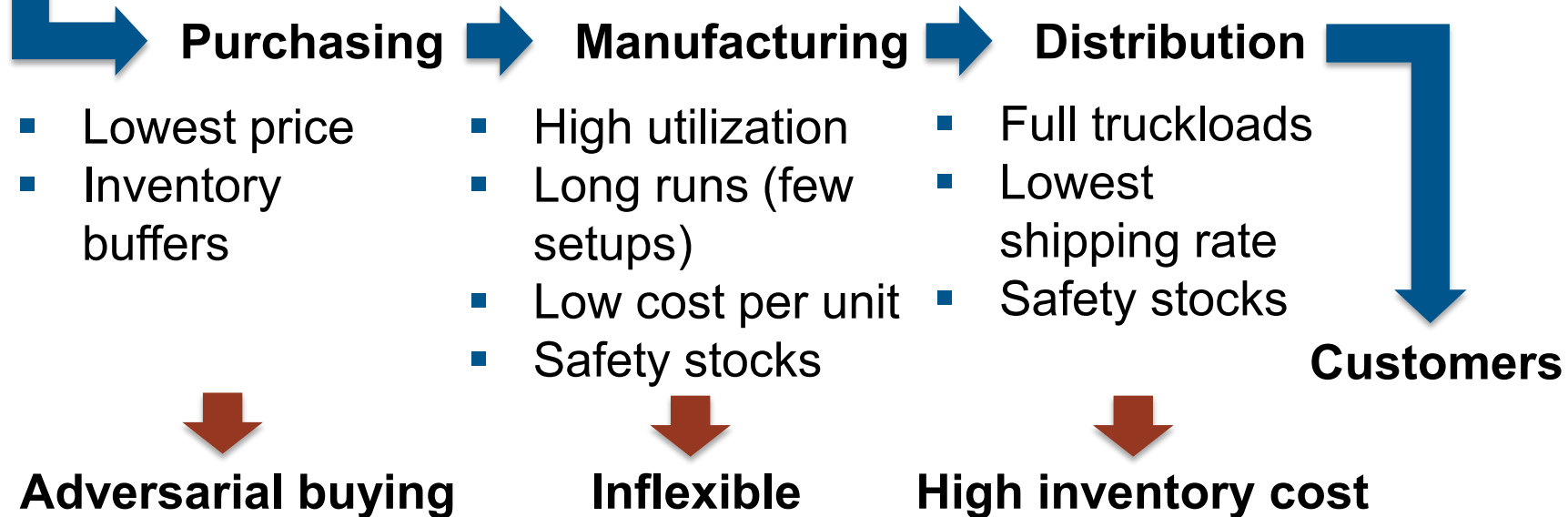
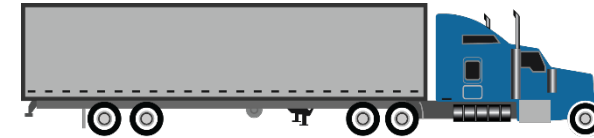
# Functional and Operational Strategies

## Functionally Oriented Organizations

**Raw materials**



Department incentives:  
Maximize own metrics at  
expense of others.



# Functional and Operational Strategies

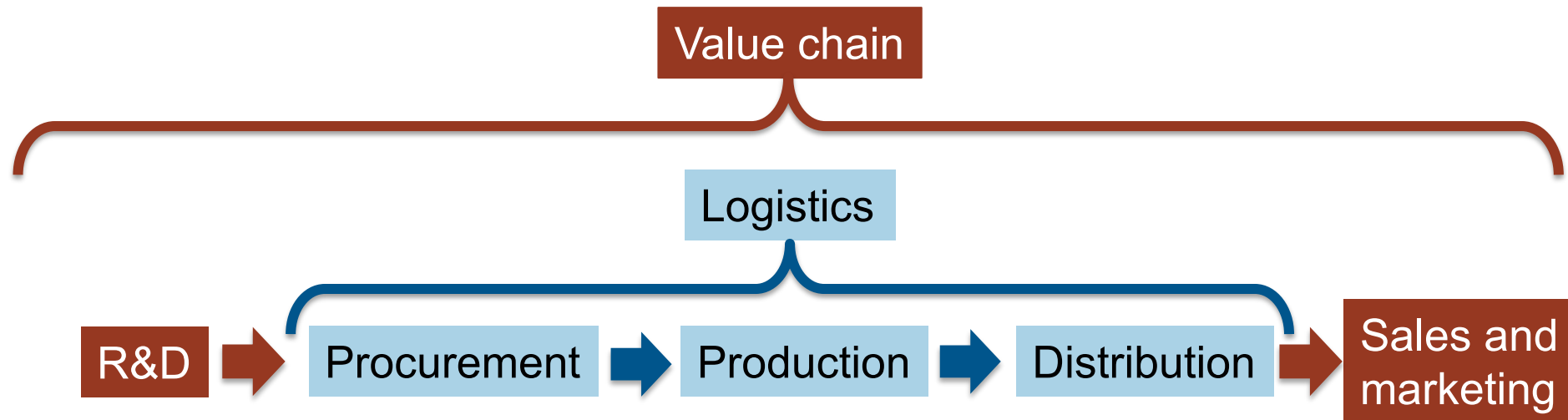
## Tradeoffs in Functionally Oriented Organizations

Functional Area	Objectives	Supply Chain Tradeoffs Results
Operations	<ul style="list-style-type: none"><li>▪ Materials available</li><li>▪ Reduced setup costs</li><li>▪ Reduced cost/unit and high economies of scale</li><li>▪ Maximized labor and equipment utilization</li><li>▪ Stable production schedules</li></ul>	<ul style="list-style-type: none"><li>▪ Safety stocks</li><li>▪ Inventory increased by long runs, few changeovers; risk of stockouts of other items</li><li>▪ Buffer inventories for high utilization</li><li>▪ High inventory</li><li>▪ Less responsive to order changes</li></ul>
Sales and marketing	<ul style="list-style-type: none"><li>▪ Maximized sales</li><li>▪ Satisfied customers</li><li>▪ Flexible product mix</li></ul>	<ul style="list-style-type: none"><li>▪ Safety stocks</li><li>▪ High inventory in distribution system</li><li>▪ Changes to production as orders change</li></ul>
Finance	<ul style="list-style-type: none"><li>▪ Maximized profit</li><li>▪ Rapid cash flow</li><li>▪ Minimized assets</li></ul>	<ul style="list-style-type: none"><li>▪ Promotion of customer service and production efficiency...</li><li>▪ ...But with low safety stocks or other inventory</li></ul>

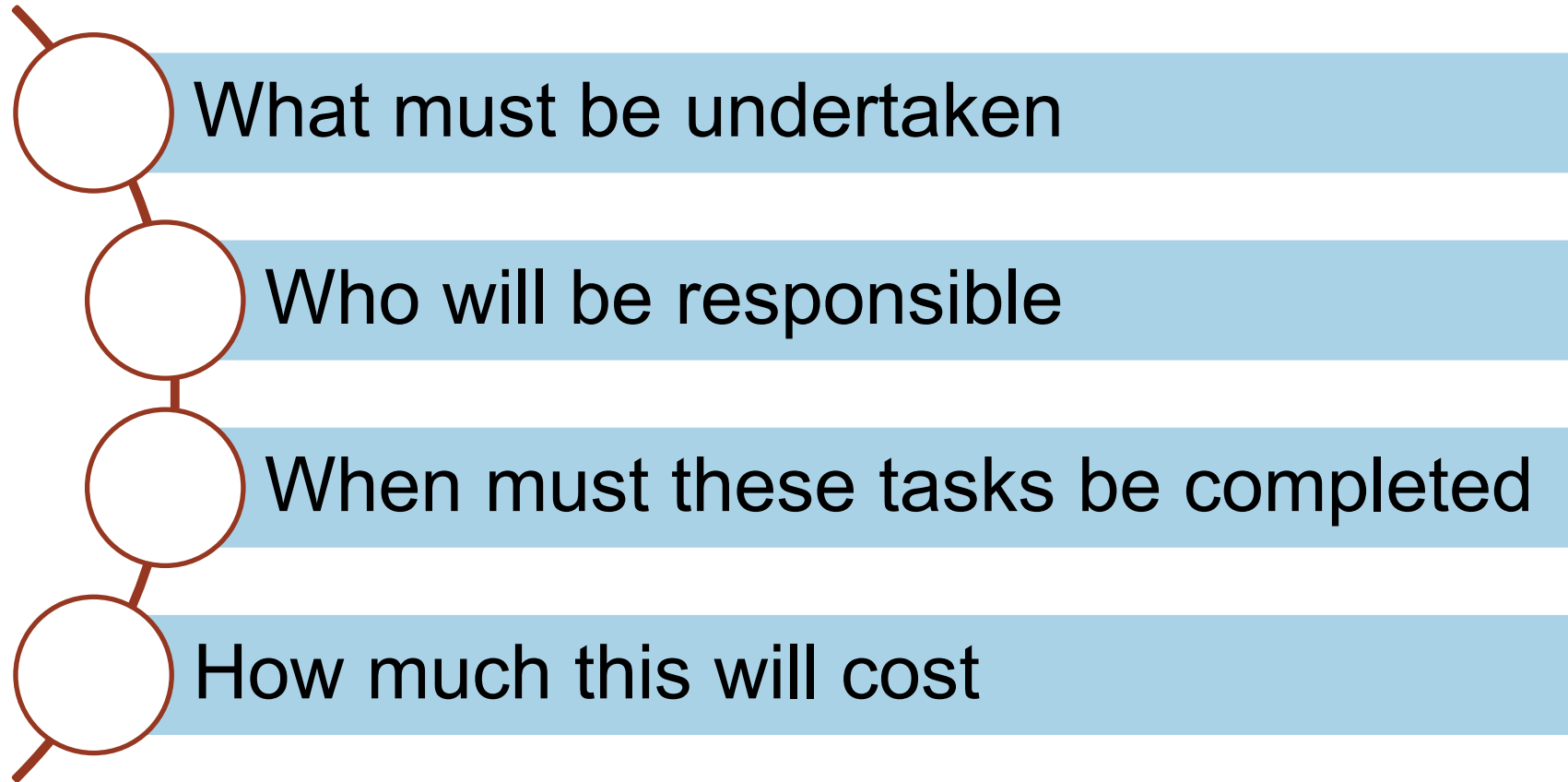
# Functional and Operational Strategies

## Cross-Functional Organizations

**Risk management** is necessary throughout the value chain due to the complexity of the involved systems.



## Operational Plan



## Details of Operational Plan

### Design

- Select products.
- Manage development.
- Make or outsource design.

### Delivery

- Monitor and adjust to demand levels.
- Processes to buy/make and deliver products.

### Development

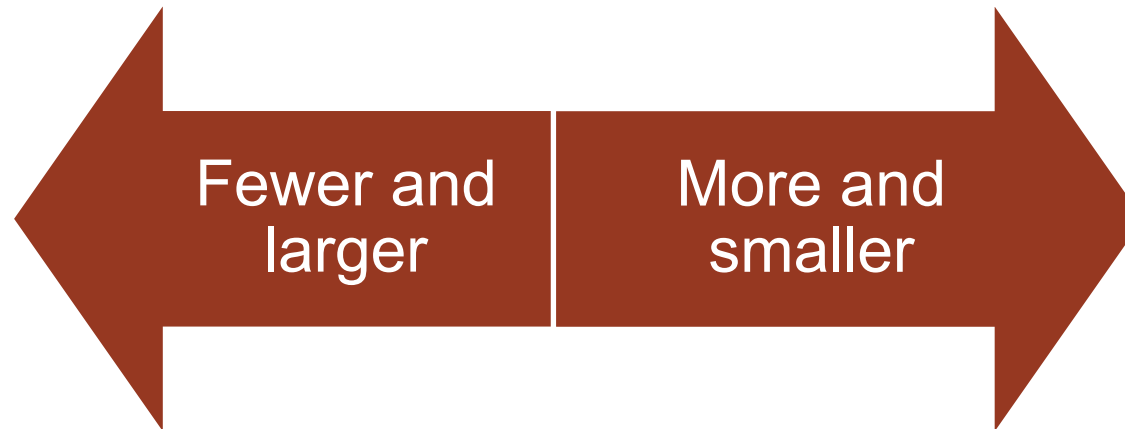
- Measure and report performance.
- Continuously improve performance.
- Assure quality.

## Make-or-Buy Decisions

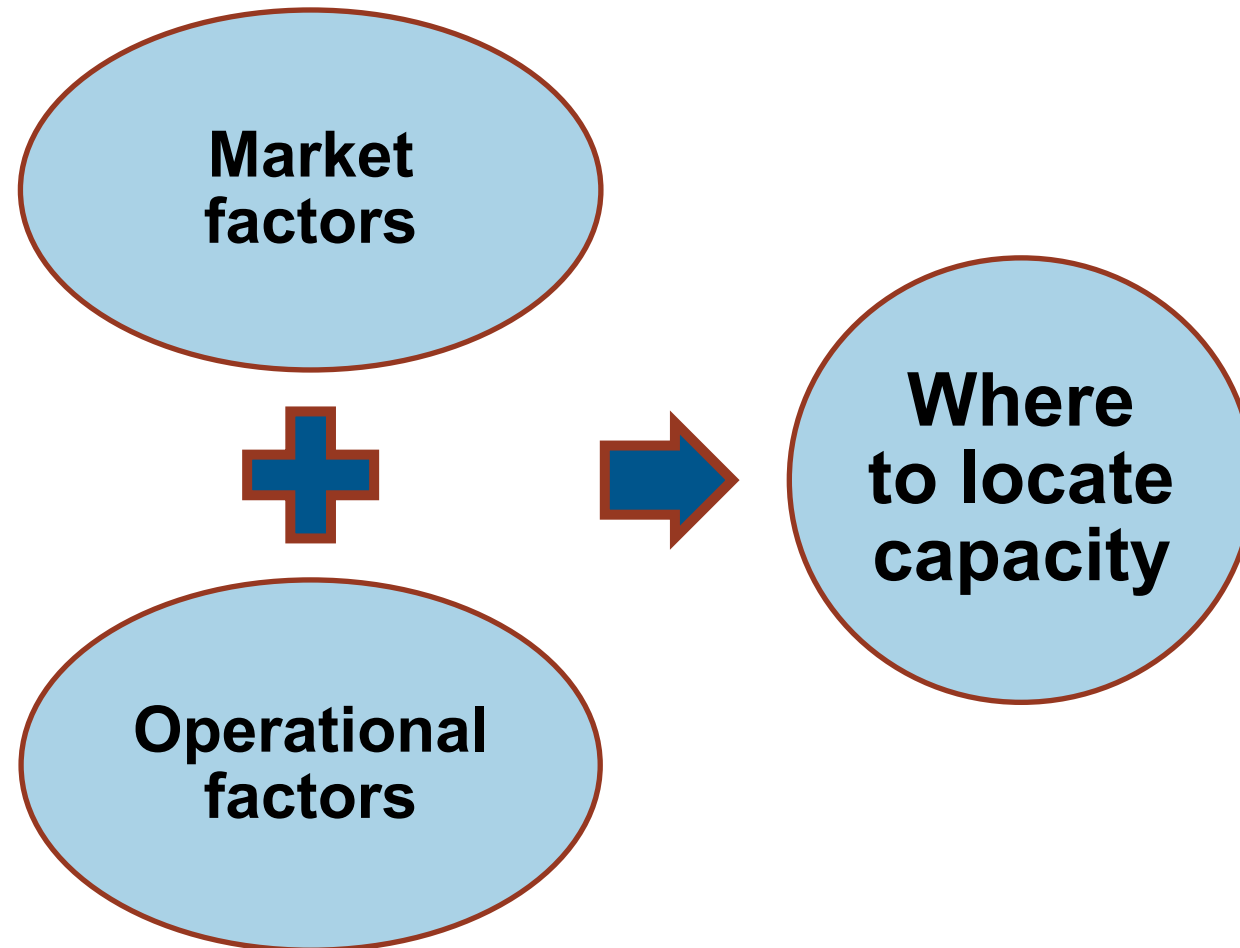
<b>Make it.</b>	<b>Think carefully.</b>	<b>Buy it.</b>
<ul style="list-style-type: none"><li>▪ Strategic importance.</li><li>▪ Specialized knowledge/skills.</li><li>▪ Will increase core competencies.</li></ul>	<ul style="list-style-type: none"><li>▪ Not strategic but could pose risk to operations performance objectives.</li></ul>	<ul style="list-style-type: none"><li>▪ Supplier has unique capabilities that buyer does not possess.</li><li>▪ Supplier can improve operations performance.</li></ul>

## Number and Size of Sites

- Less costly to operate due to economies of scale
- Less costly to supply centralized locations
- Increased customer responsiveness
- Decreased cost of transportation to customers



## Locating Capacity



# Aligning Facility Strategy

## Number and Size of Sites Exercise

Decision Factors (X indicates advantage in a few large sites or many small sites.)	Market Area Served by:	
	Few Large Sites	Many Small Sites
Economies of scale	X	
Transportation costs		X
Customer service		X
Sales volume		X

## Number and Size of Sites Discussion

1. Explain the relationship of the number and size of manufacturing sites to transportation costs.
2. What effect will adding retail sites in a regional market have on customer service, and why?
3. Explain the relationship in a regional market of the number of retail sites to sales volume.
4. What different performance objectives do a few large sites versus many small sites relate to?

## Global Strategies: Locating Value Chain Activities

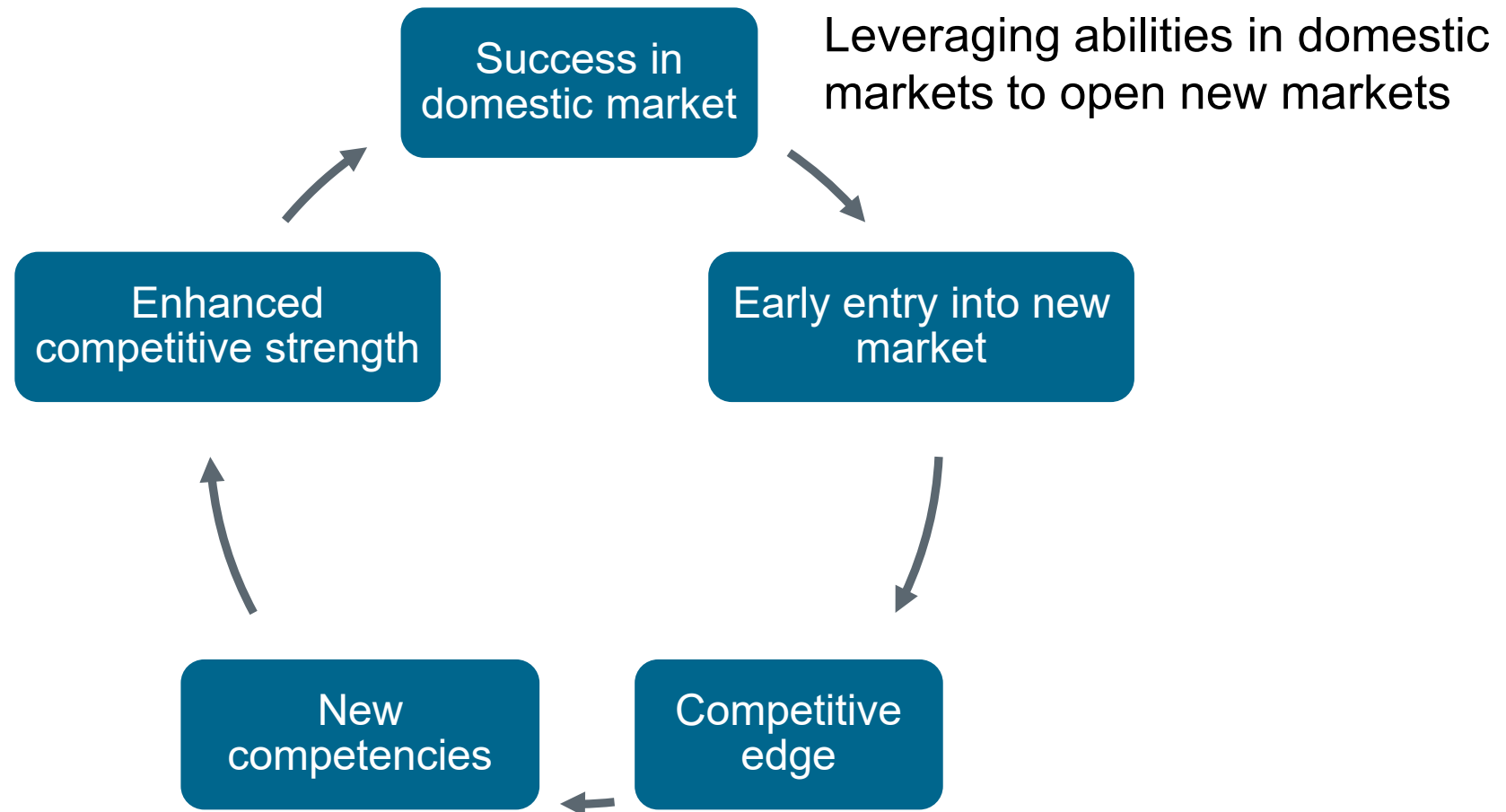
### Advantages of widespread dispersal

- Firms with many global markets can deliver faster service from distribution centers near customers.
- Diversification reduces risk of interruption or impact of currency fluctuation.

### Advantages of focused location

- Local production advantages that outweigh transportation cost.
- Economies of scale from a few large centers.
- Learning curve effects minimized.
- Better coordination with large suppliers and customers.

## Global Strategies: Domestic Competencies in New Markets



# Aligning Facility Strategy

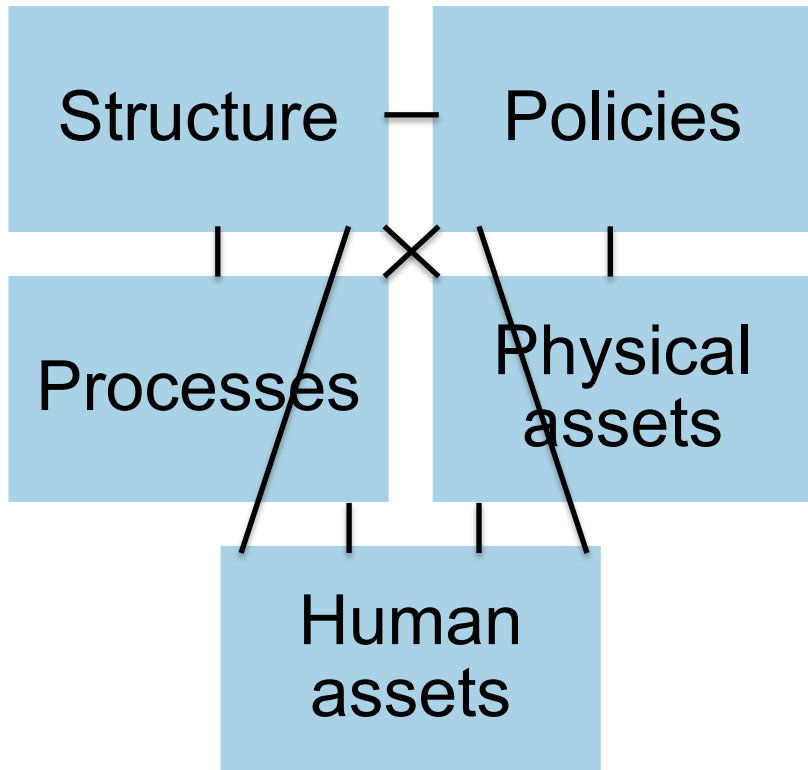
## Ways to Enter Markets

Entry Option	Some Advantages	Some Disadvantages
Export	Minimal investment and maximum control	Costs of shipping and currency fluctuation
Licensing	Low investment and income from royalties	Loss of proprietary knowledge
Franchising	Lower costs and income from franchising fees	Damage to brand and identity
Subsidiary	Control over business and profits	Significant investment and risk of cultural conflicts
Strategic alliance/joint venture	Combined competitive strengths and organizational learning	Less control, more conflicts, loss of proprietary information

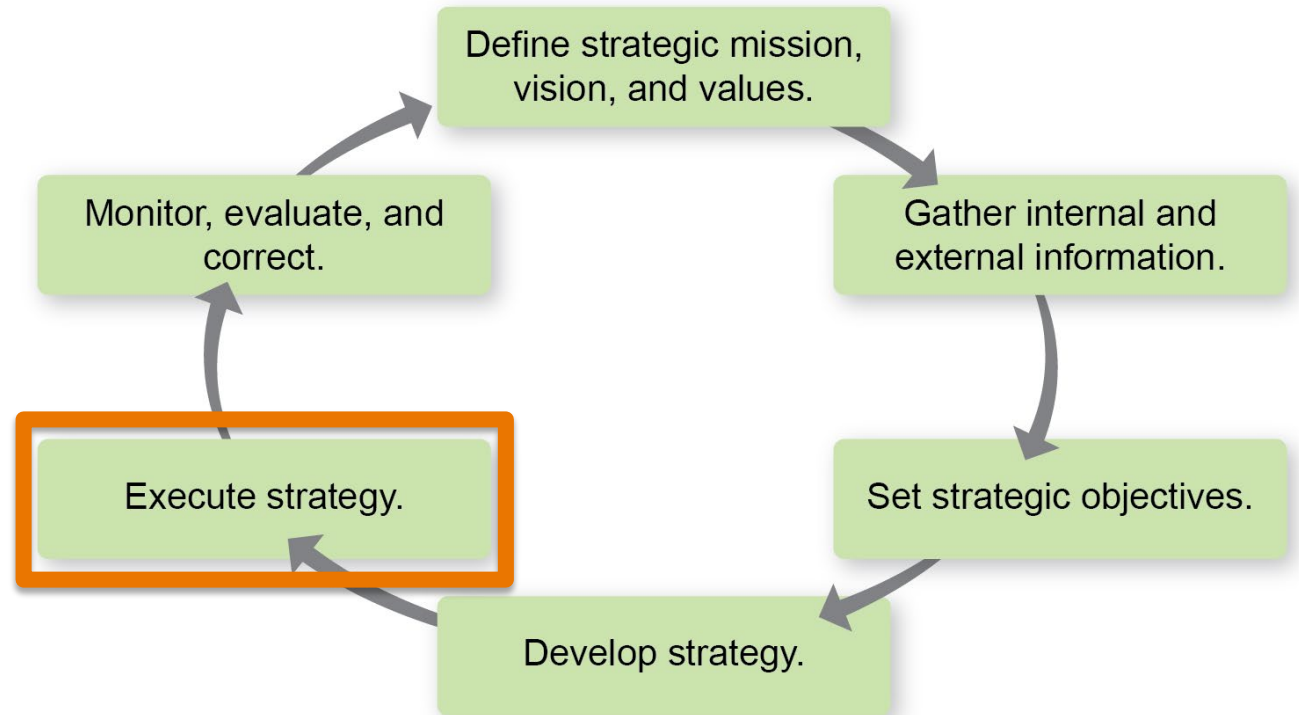
# Executing, Monitoring, and Changing Strategy

## Executing Strategy

### Execution elements



### Align the organization's infrastructure to achieve its strategic goals



# Executing, Monitoring, and Changing Strategy

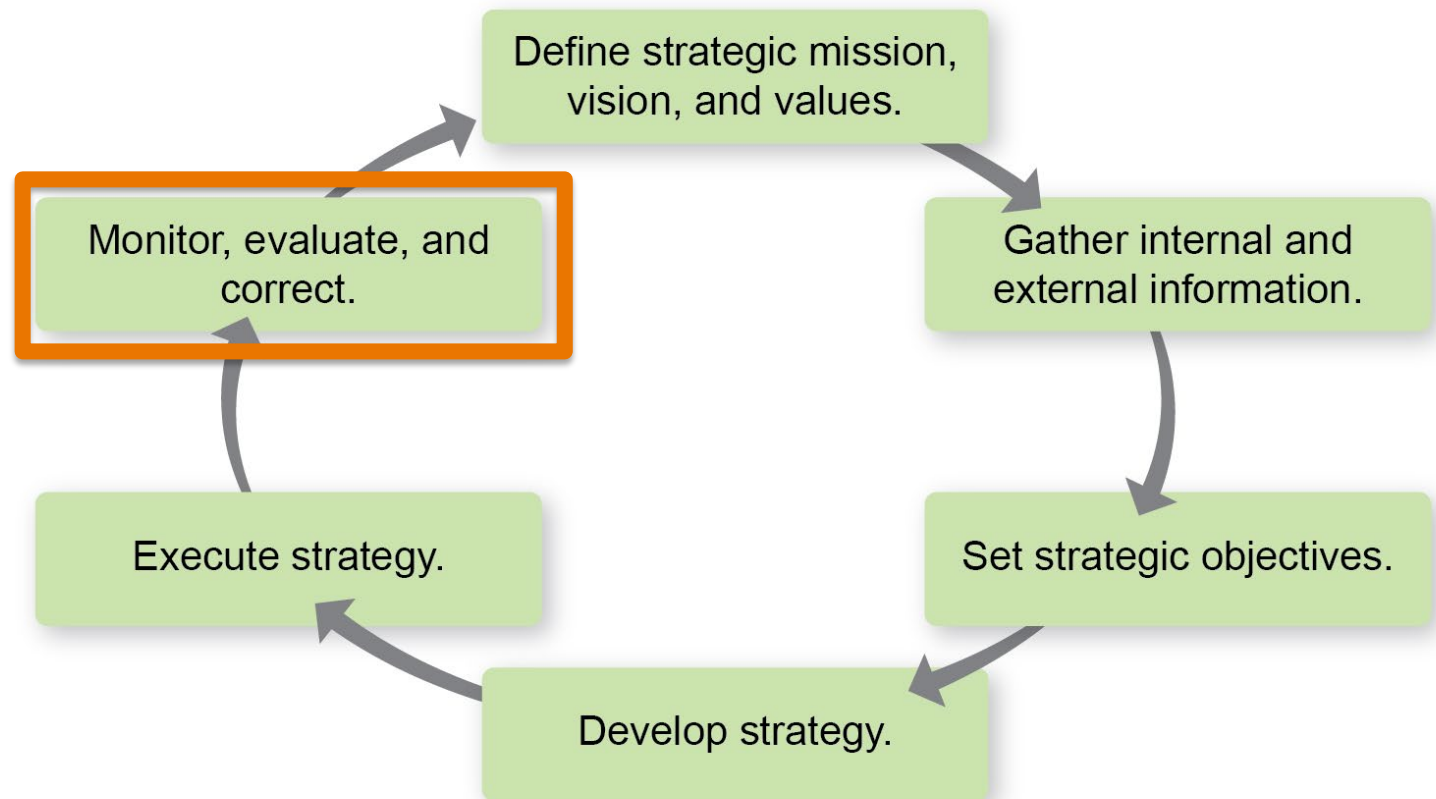
## Monitoring, Evaluating, and Correcting Course

Strategies and tactics must be monitored:

Are strategies and tactics producing the intended results?

Do conditions still support the strategy?

What unintended results must be managed?



## Kotter's *Change and Accelerate*: Human Nature's Modes

### Survive mode

- Fight or flight
- Focused response to threats
- Persisting in mode: burnout, less chance to seize opportunities
- Avoid survive mode dominating people's behavior

### Thrive mode

- Instinct to pursue opportunities
- Excitement and purpose
- Inspire and empower people
- Leadership needed, not management

# Executing, Monitoring, and Changing Strategy

## Kotter's *Change and Accelerate*: Dual Operating System

Existing organizational structure + new network structure

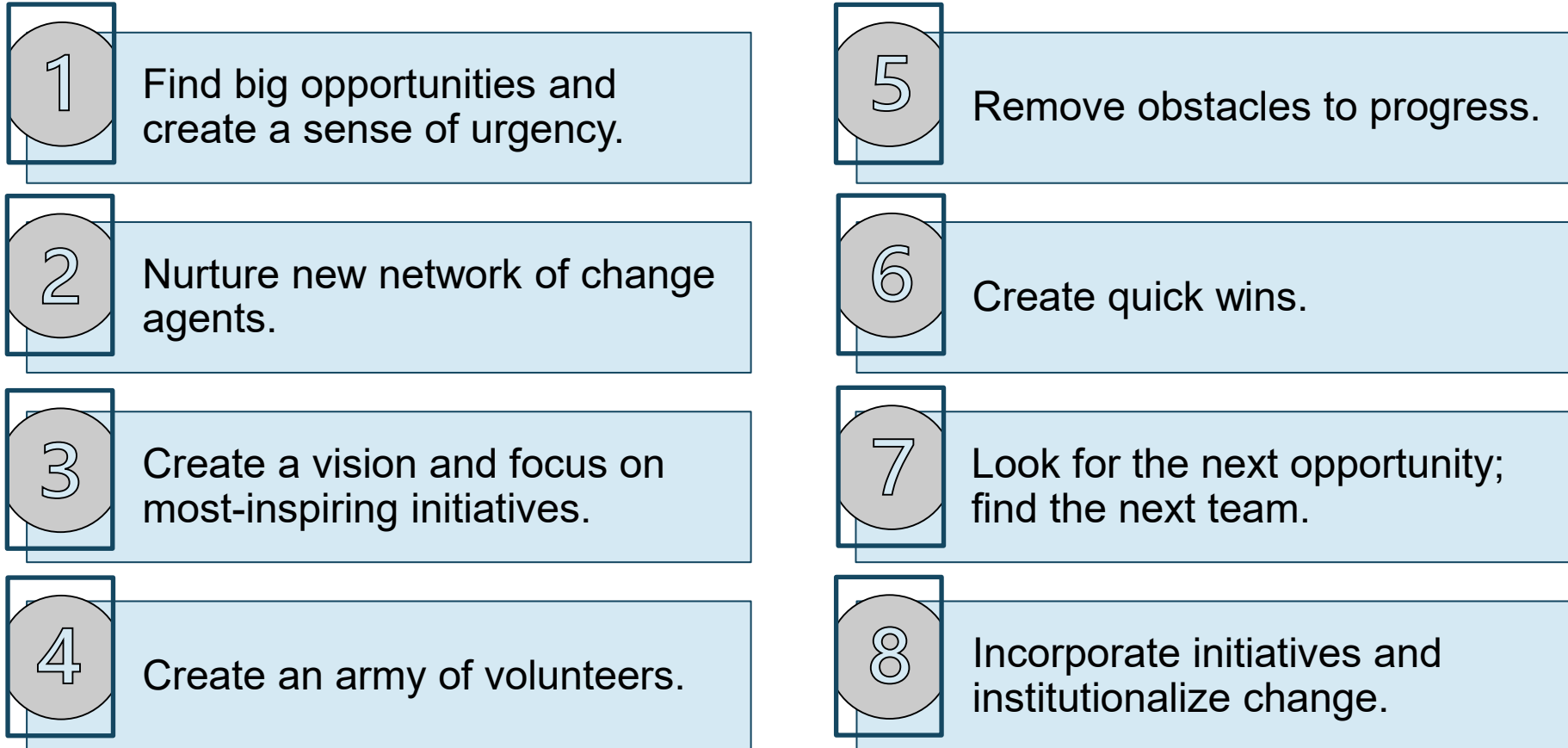
Goal: Efficiency plus entrepreneurial energy and innovation

Hierarchical Structure Roles	Network Roles
Day-to-day affairs	Big opportunities
Extensions of current strategy	New strategies requiring speed and agility
Enabling continuous improvement and increased efficiency	Creating breakthroughs and large-scale change
Management	Leadership
Logic	Creativity

## Dual Operating System Principles

- Broad internal team base.
- “Get to” rather than “have to” volunteering.
- Heart plus head.
- Leadership is the key.
- Inseparable left and right brains.

## Big Opportunity and Eight Accelerators



# **CPIM** CERTIFIED IN PLANNING AND INVENTORY MANAGEMENT

## **SECTION D: PERFORMANCE MONITORING AND KPIS**

## Section D Learning Objectives

- Performance measurement and KPI principles
- Balanced scorecard
- SMART goals and integrated measurement model
- Financial ratios: liquidity, activity, leverage, profitability, market value
- Financial ratio analysis and metrics
- Strategic and operational metrics

## Metrics to Measure Performance

- Critical few KPIs at each level
- Motivate teams and individuals
- Metrics need
  - Performance criterion (metric)
  - Performance standard (target)
  - Actual measurement



## KPIs

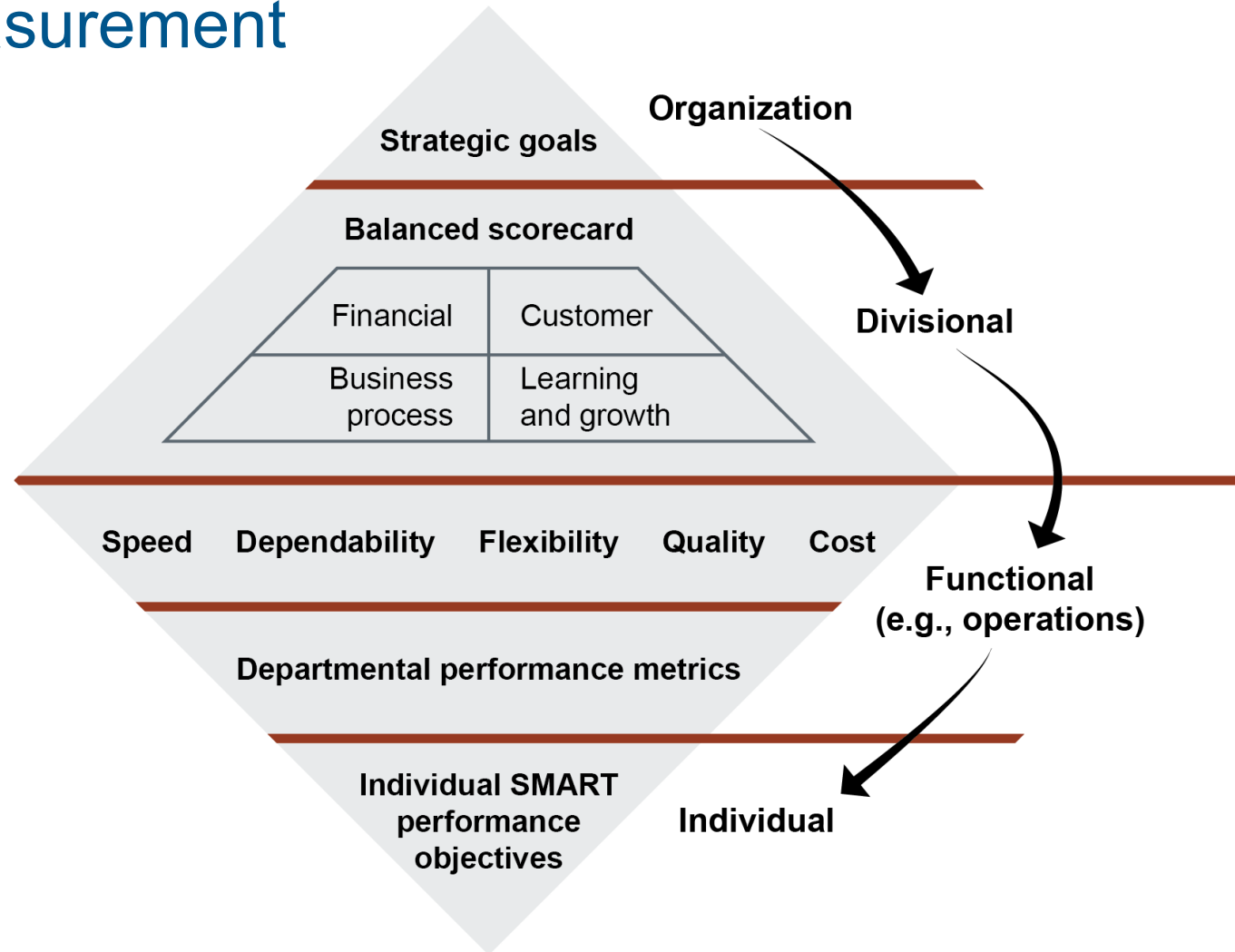
- Provide linkage to strategy
- Should reflect strategic priorities
- Should be set at strategic, tactical, and operational levels
- Can involve entire supply chain
- Don't try to measure everything but to measure the right things

### **Key performance indicator (KPI):**

- Financial or nonfinancial measure
- Defines progress toward specific organizational goals

# Performance Monitoring Systems

## Integrated Measurement Model

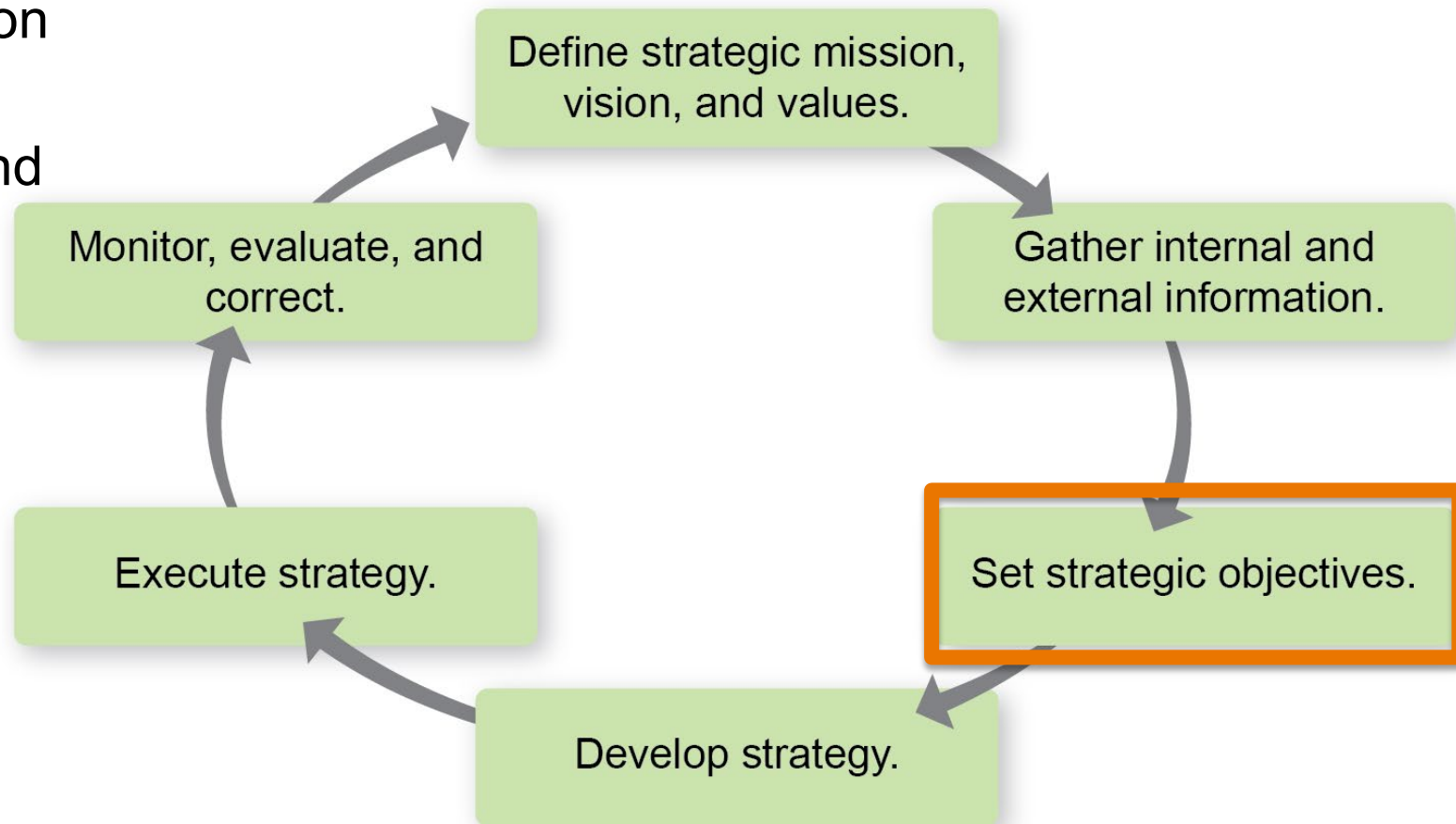


# Performance Monitoring Systems

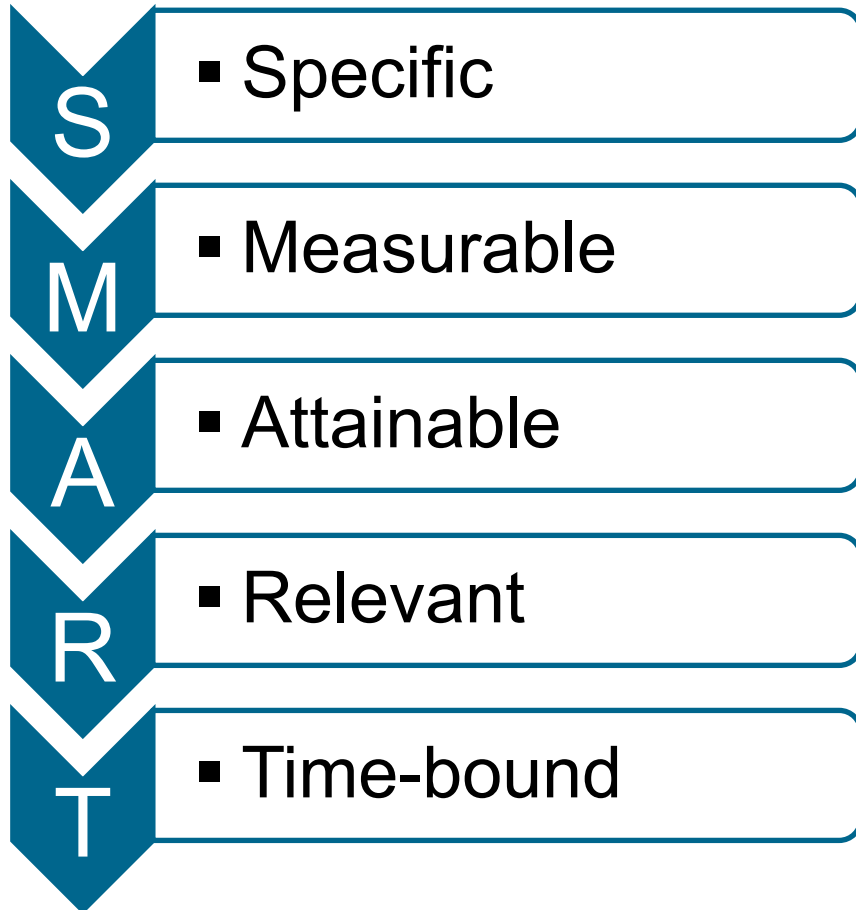
## Set Objectives

Objectives turn mission and vision into actionable goals.

- Ensure strategic alignment and accountability.
- Align decisions and actions with strategic goals.
- Set basis for measuring effectiveness of strategy/implementation.
- Motivate everyone to achieve and surpass goals.



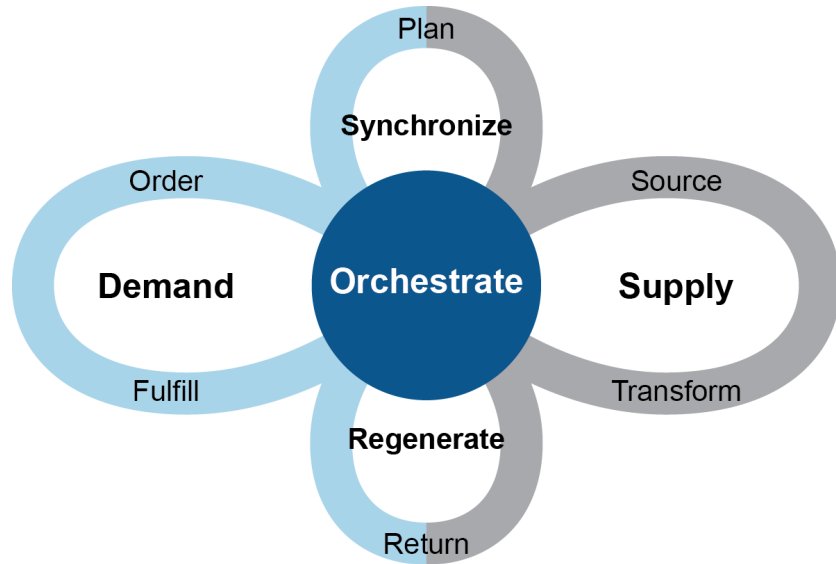
## SMART Objectives



- SMART objectives translate strategy into actual results.
- What-if analysis to determine strategy profitability.
- Tactics and operations must link back to strategy.

# Performance Monitoring Systems

## SCOR DS Processes: Double Infinity Symbol for Never-Ending Processes



Source: Copyright ASCM. Used with permission.

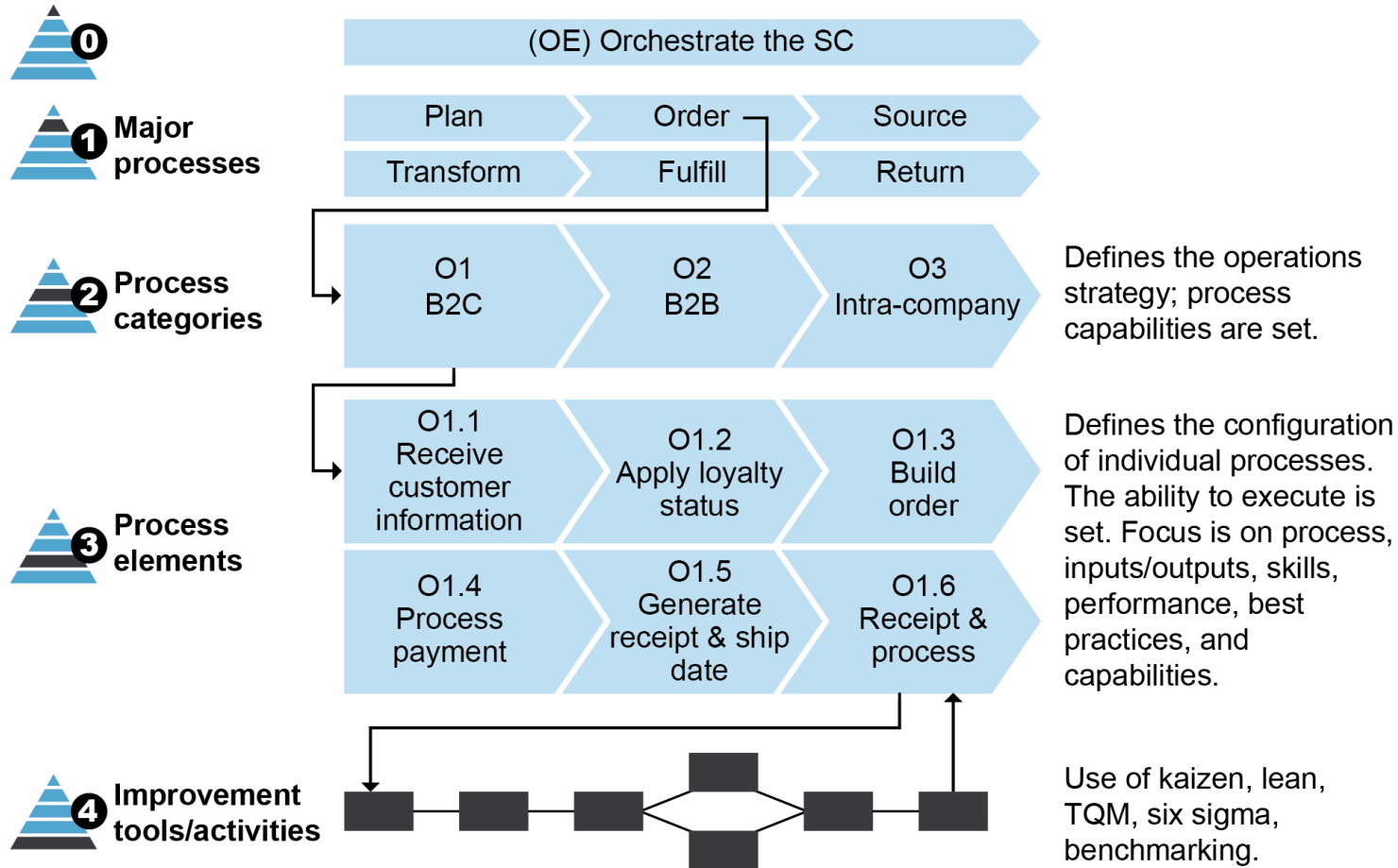
### Moving beyond linear supply chain depictions to supply networks



Source: ASCM, "Introduction to Supply Chain Management Using SCOR." Available from SCOR-DS website. Used with permission.

# Performance Monitoring Systems

## SCOR DS Hierarchical Process Model



Source: SCOR DS. Copyright ASCM. Used with permission.

- Performance: levels 1 to 3 in KPI tree
- Level 4 is specified by organization but linked to higher levels

## SCOR DS Four Major Sections

### Performance

- Supply chain strategy attributes (e.g., reliability, agility)
- KPI tree with related metrics

### Processes

- Management process standard descriptions
- As-is, what-if, and to-be states

### Practices

- Unique way to configure process
- Pillars
- Analytics and technology (BP.049 Lean Planning)
- Process (BP.009 Kanban)
- Organization (BP.160 Lean)

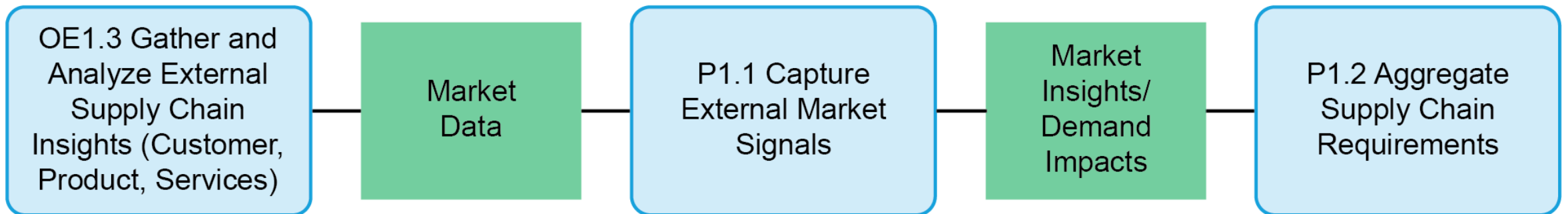
### People

- Standard skill definitions, experiences, and training
- Competency levels
- Novice
- Beginner
- Competent
- Proficient
- Expert

## Learning How to Use SCOR DS for Transformations

- SCOR DS scope: order entry through paid invoice
- Learn more at SCOR DS website ([www.scor.ascm.org](http://www.scor.ascm.org)).
- Study and adapt standard process workflows to needs:

### Workflow



Source: ASCM, "P1.1 Capture External Market Signals." Available from SCOR DS web site.  
Used with permission.

## SCOR DS Resilience Performance Attributes

Performance Attribute	Definition
<b>Reliability (RL)</b>	“The ability to perform tasks as expected. Reliability focuses on the predictability of the outcome of a process. Typical metrics for the Reliability attribute include delivering a product on time, in the right quantity, and at the right quality level.”
<b>Responsiveness (RS)</b>	“The speed at which tasks are performed and the speed at which a supply chain provides products to the customer. Examples include cycle-time metrics.”
<b>Agility (AG)</b>	“The ability to respond to external influences and marketplace changes to gain or maintain a competitive advantage.”

## SCOR DS Economic Performance Attributes

Performance Attribute	Definition
<b>Costs (CO)</b>	“The cost of operating the supply chain processes. This includes labor costs, material costs, and management and transportation costs.”
<b>Profit (PR)</b>	“The Profit attribute describes the financial benefit realized when the revenue generated from the business activity exceeds the expenses, costs, and taxes involved in sustaining the activity.”
<b>Assets (AM)</b>	“The ability to efficiently utilize assets. Assets’ strategies in a supply chain include inventory reduction and insourcing rather than outsourcing.”

## SCOR DS Sustainability Performance Attributes

<b>Performance Attribute</b>	<b>Definition</b>
<b>Environmental (EV)</b>	“The Environmental attribute describes the ability to operate the supply chain with minimal environmental impact, including materials, water, and energy.”
<b>Social (SC)</b>	“The Social attribute describes the ability to operate the supply chain aligned with the organization’s social values, including diversity and inclusion, and training metrics.”

# Performance Monitoring Systems

## Benchmarking Tools: SCORmark example

- Versus competitors
  - Superior: >90%
  - Advantage: >70%
  - Parity: > 50%
- Benchmark metrics readily available, e.g.,
  - SCORmark: Compare against 1,000 organizations and 2,000 supply chains.

Attribute	Metrics	Target Performance	Your Organization	Parity (50%)	Advantage (70%)	Superior (90%)	Gap to Target
<b>Reliability</b>	Perfect customer order fulfillment	Advantage	70%	X 77%	85%	93%	-15%
<b>Responsiveness</b>	Customer order fulfillment cycle time	Parity	6	9.1	7 X	4	3.1
<b>Agility</b>	Supply chain agility, strategic (days)	Parity	35	X 30	25	20	-5
<b>Cost</b>	Total supply chain management cost (% of revenue)	Advantage	8%	8.70% X	5%	2.40%	-3%
<b>Profitability</b>	EBIT (as a % of revenue)	Parity	16%	14%	X 17%	20%	2%
<b>Assets</b>	Cash-to-cash cycle time (days)	Superior	52	55.4 X	30.5	0	-52
<b>Environmental</b>	Waste generated (metric tons)	Parity	14.3	X 13.4	11.2	9.2	-0.9
<b>Social</b>	Training (hours per year)	Advantage	80	X 82.1	91.5	100.1	-11.5

X Your organization

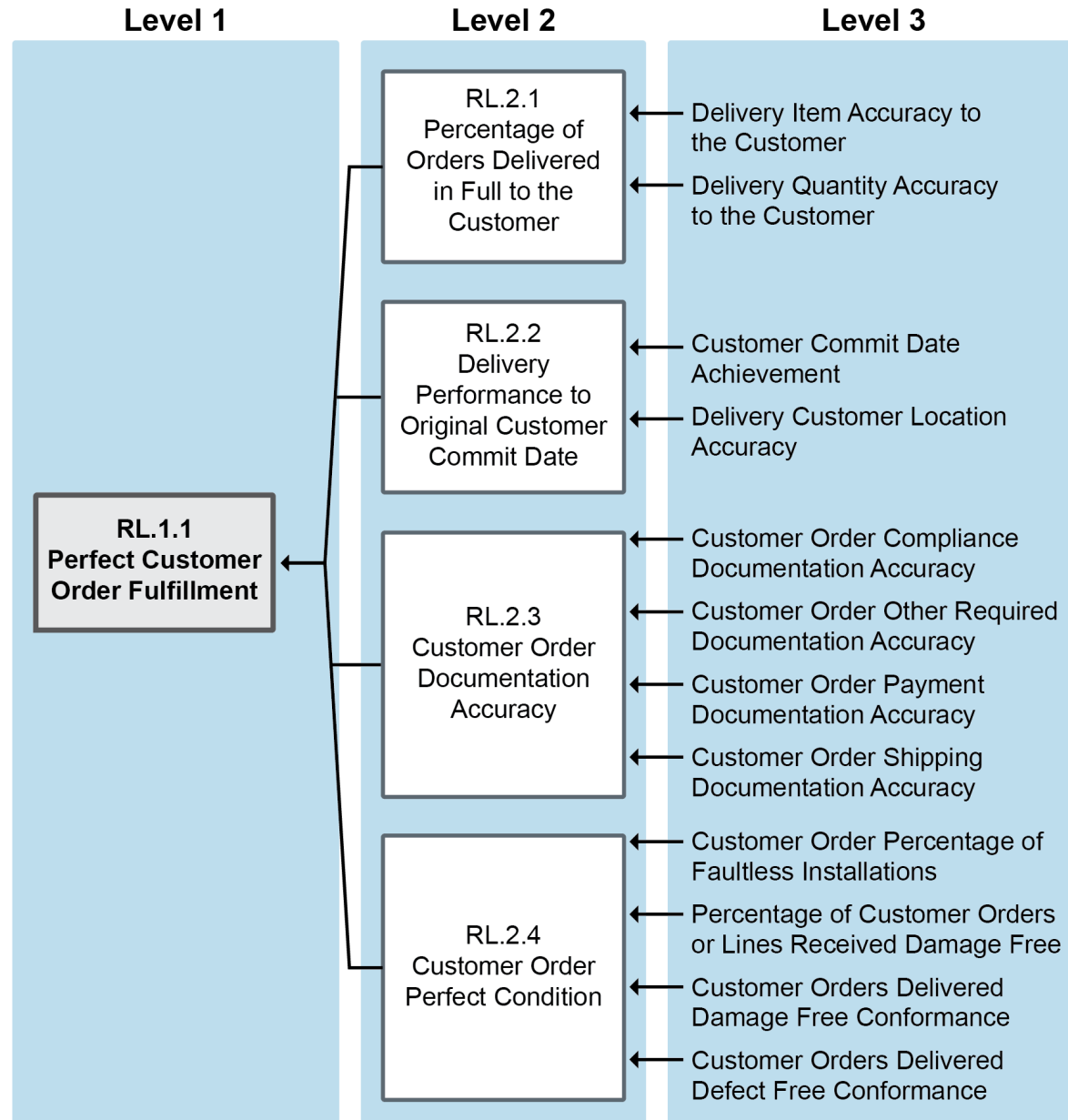
Source: Adapted from SCOR-Professional Training. Used with permission. Values are for example only.

# Performance Monitoring Systems

## SCOR DS Performance Metrics

Resilience	Economic	Sustainability
<b>Reliability</b> <ul style="list-style-type: none"><li>Perfect Customer Order Fulfillment</li><li>Perfect Supplier Order Fulfillment</li><li>Perfect Return Order Fulfillment</li></ul>	<b>Costs</b> <ul style="list-style-type: none"><li>Total Supply Chain Management Cost</li><li>Cost of Goods Sold</li></ul>	<b>Environmental</b> <ul style="list-style-type: none"><li>Materials Used</li><li>Energy Consumed</li><li>Water Consumed</li><li>GHG Emissions</li><li>Waste Generated</li></ul>
<b>Responsiveness</b> <ul style="list-style-type: none"><li>Customer Order Fulfillment Cycle Time</li></ul>	<b>Profit</b> <ul style="list-style-type: none"><li>Earnings Before Interest and Taxes (EBIT) as a Percent of Revenue</li><li>Effective Tax Rate</li></ul>	
<b>Agility</b> <ul style="list-style-type: none"><li>Supply Chain Agility (strategic or operational)</li></ul>	<b>Assets</b> <ul style="list-style-type: none"><li>Cash-to-Cash Cycle Time</li><li>Return on Fixed Assets</li><li>Return on Working Capital</li></ul>	<b>Social</b> <ul style="list-style-type: none"><li>Diversity and Inclusion</li><li>Wage Level</li><li>Training</li></ul>

## KPI Trees in SCOR DS



## Performance Targets and SCOR DS

### Speed (SCOR DS responsiveness)

- Customer query time, order lead time, actual vs. theoretical lead time, cycle time, minimum and average delivery time

### Dependability (SCOR DS reliability)

- Percent orders delivered late, average lateness, proportion in stock, mean deviation from promised arrival

### Flexibility (SCOR DS agility)

- Time to develop new products, range of products, machine changeover time, average batch size

### Quality (SCOR DS reliability)

- Number of defects per unit, level of customer complaints, scrap level, warranty claims, MTBF, customer satisfaction

### Cost (SCOR DS cost and assets)

- Efficiency, variance vs. budget, value added, labor productivity, cost per operation hour, resource utilization

# Strategic, Financial, and Operational Metrics

## Strategic-Level Metrics: Balanced Scorecard

Customer Perspective			
Goal	Metric	Target	Actual
Delivery	Orders in full	99%	98%

Business Process Perspective			
Goal	Metric	Target	Actual
No rework	Rework	0 units	2 units

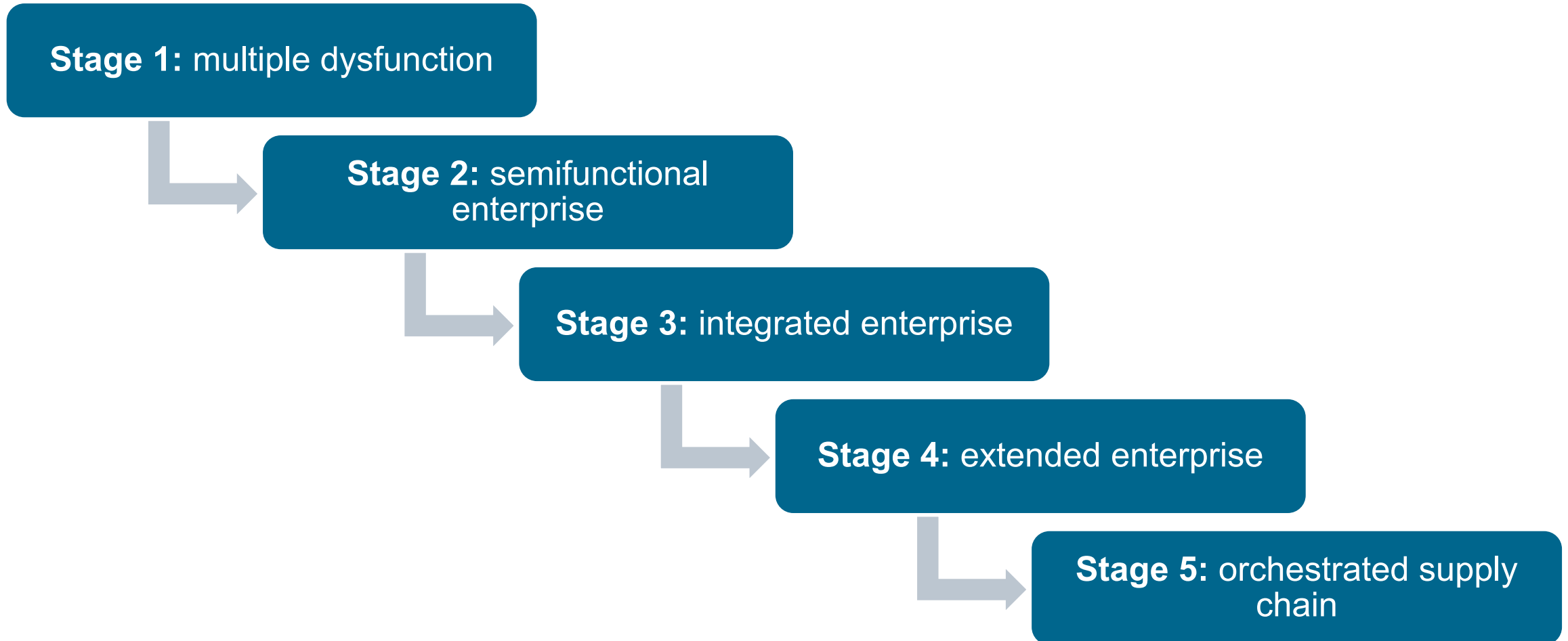
Financial Perspective			
Goal	Metric	Target	Actual
Low finished goods	Carrying cost	<\$50,000	\$62,000

Innovation and Learning Perspective			
Goal	Metric	Target	Actual
Flexible	Cross-train	50%	28%

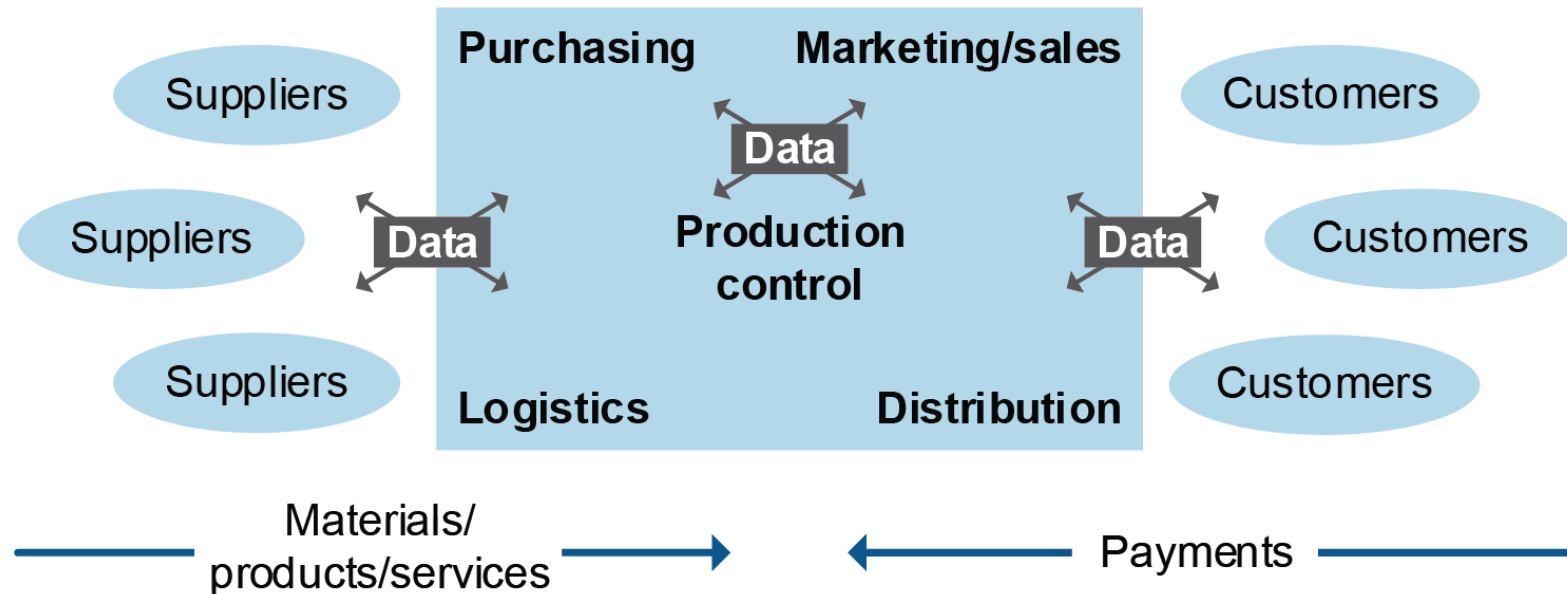
# Strategic, Financial, and Operational Metrics

## Levels of Maturity



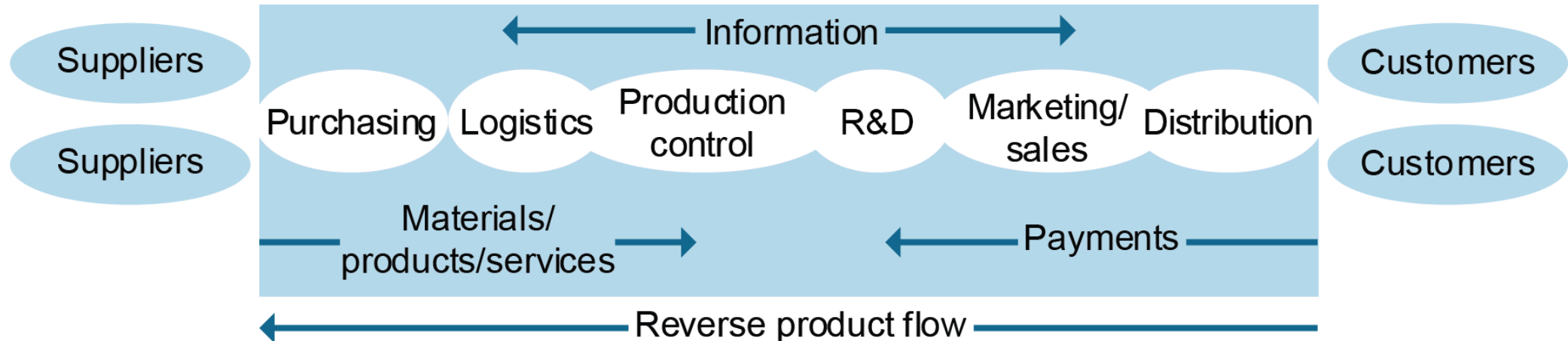
## Stage 1: Multiple Dysfunction

No clear, coordinated information flows or partner relationships, internal definitions or goals, or external links (except transactions)



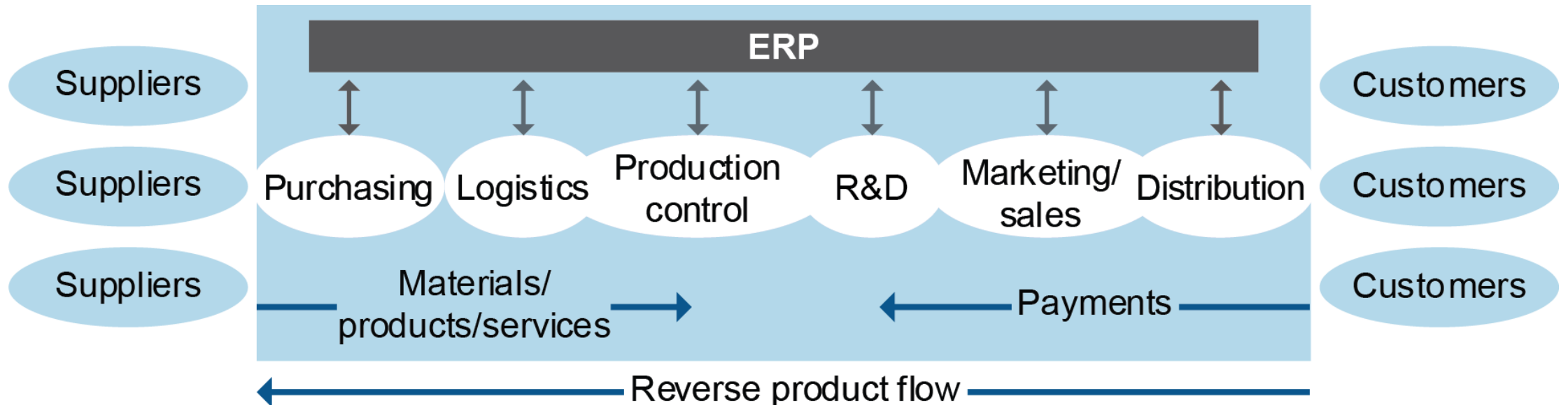
## Stage 2: Semifunctional Enterprise

- Improved information flow
- Defined functional areas work sequentially without collaborating on effective ways to create value
- No supplier or customer partnerships



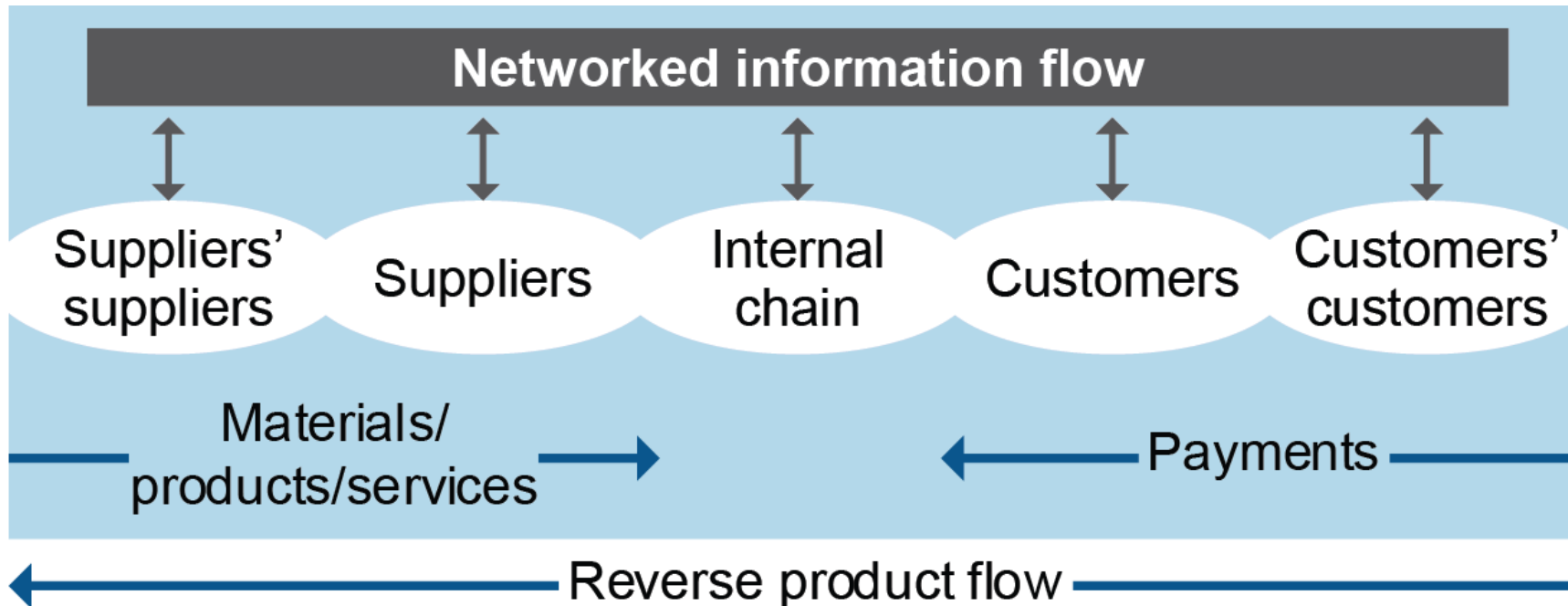
## Stage 3: Integrated Enterprise

- Better cross-functional integration of ERP software, cross-functional communication, training
- Centrally located and easily accessible databases and files



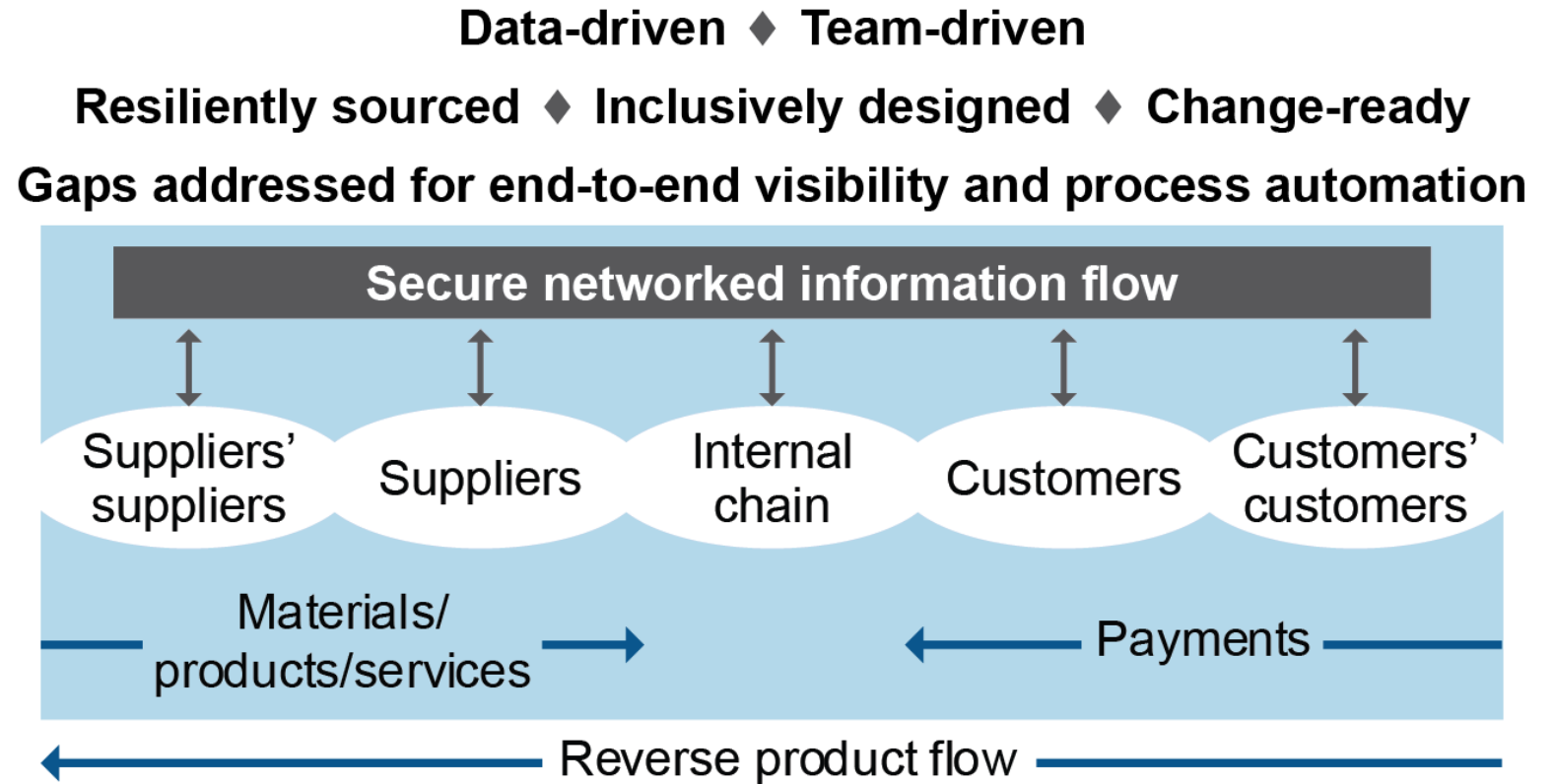
## Stage 4: Extended Enterprise

Extends at least one business process beyond organization



## Stage 5: Orchestrated Supply Chain

- Digital transformation
- Relative
  - Competitive advantage?
  - Close gaps
- People are ready



## Ratio Analysis

Relation of one value to another that enables common-size comparison.

Significance is specific to industry and strategy.

### Liquidity

- Satisfy short-term debt
- Positive cash flow

### Activity

- Efficiency of asset use

### Leverage

- Satisfy long-term debt

### Profitability

- Signals health and management

### Market value

- Stock attractiveness

## Cash-to-Cash Cycle Time

Cash-to-Cash Cycle Time = Days' Inventory Outstanding + Days' Sales Outstanding – Days' Payables Outstanding

$$\text{Days' Inventory Outstanding} = \frac{\text{Average Inventory}}{\text{Cost of Goods Sold}} \times 365$$

$$\text{Days' Sales Outstanding} = \frac{\text{Average Accounts Receivable}}{\text{Net Credit Sales}} \times 365$$

$$\text{Days' Payables Outstanding} = \frac{\text{Average Accounts Payable}}{\text{Cost of Sales}} \times 365$$

## Operational Performance Measurements

### Global operational metrics

- Total factor productivity

### Detailed performance measures

- Generic performance objectives: Speed, dependability, flexibility, quality, and cost