

Production Systems

BA291



Learning Objectives:

1. Explain the systems perspective, and identify seven principles of systems thinking that can improve your skills as a manager.
2. Describe the *value chain* concepts and discuss the controversy over offshoring
3. Define *supply chain management* and explain its strategic importance
4. Identify the major production types and operations management

The Systems View of Business

System

An interconnected and coordinated set of *elements* and *processes* that converts *inputs* to desired *outputs*

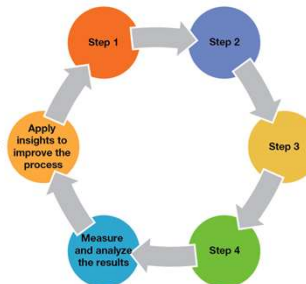
Point view: A single task is completed in isolation.



Line view: A series of related tasks are completed in succession.



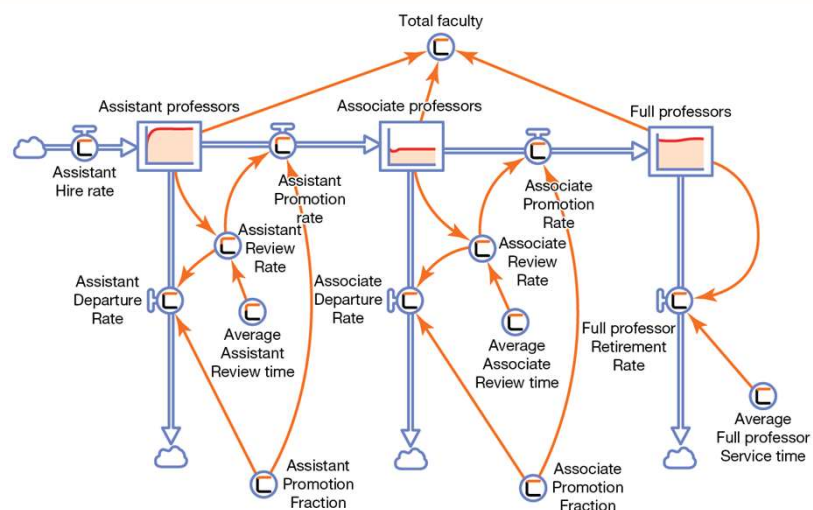
Circular view: A series of related tasks are completed in succession, the results of the effort are analyzed, and the insights from that analysis are used to improve quality and efficiency of the next cycle of the process.



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Exhibit 9.2 Systems Diagram and Simulation



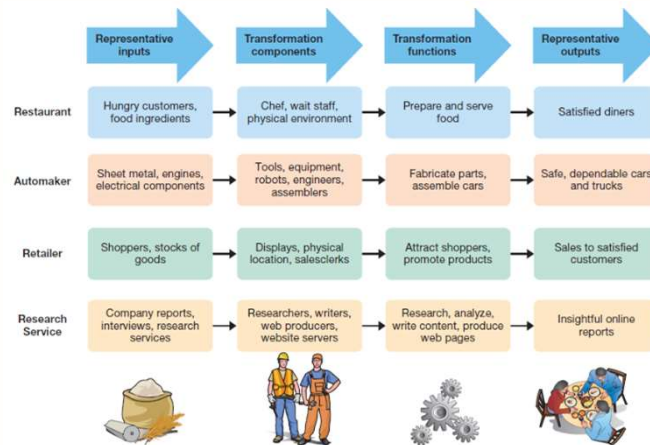
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Value Chain

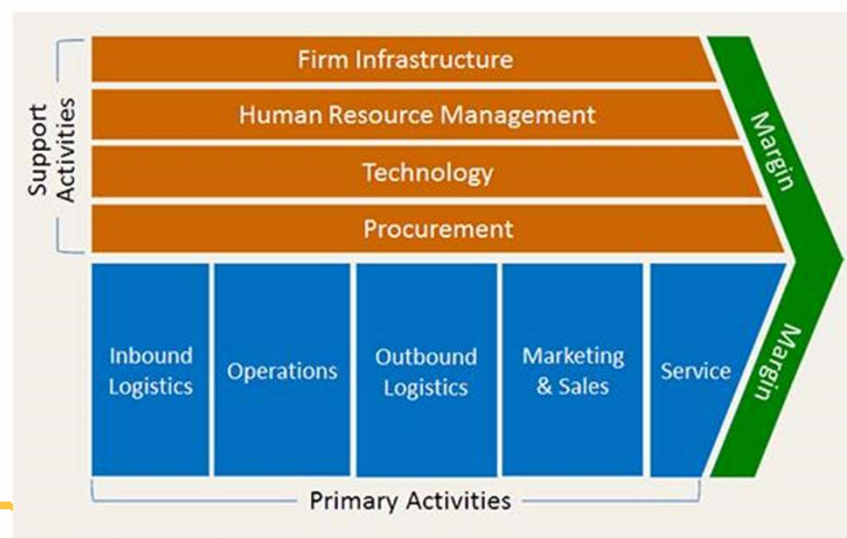
Value Chain

All the elements and processes that add value as raw materials are transformed into the final products made available to the ultimate customer



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Porter's Value Chain



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Outsourcing

Outsourcing

Contracting out certain business functions or operations to other companies

Offshoring

Transferring a part or all of a business function to a facility (a different part of the company or another company entirely) in another country

Advantages

- Speed
- Flexibility
- Opportunities to access talents and techn
- Cost reduction

Trump: 'We can't continue to allow China to rape our country'



Disadvantages

- Lack of control
- Offshoring controversy

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The Offshoring Controversy

Arguments for Offshoring		Arguments Against or Concerns About Offshoring	
Stakeholders who benefit	Argument	Stakeholders who suffer	Argument
 Shareholders	Responsibility to shareholder interests: Companies that engage in offshoring say they have a duty to manage shareholder investments for maximum gain, so it would be irresponsible not to explore cost-saving opportunities such as offshoring.	 Workers	Loss of well-paid U.S. jobs: Opponents of offshoring say that companies are selling out the U.S. middle class in pursuit of profits and pushing a trend that can only harm the country.
 Consumers	Lower prices for U.S. Consumers: For goods in which labor represents a significant portion of production costs, dramatically lowering labor costs lets a company lower its prices to consumers.	 Shareholders	Hidden costs and risks: Critics and some insiders say the real savings are not as great as proponents claim and that same companies fail to adequately analyze the costs and risks. Says J. Paul Dittman of the University of Tennessee, "Many firms are rethinking the mad rush to outsource . . . the long supply lines, incredibly volatile fuel costs, exchange rates, the geopolitical risks have all come home to roost."
 Shareholders	Lack of choice in competitive industries: Given the pricing advantage that offshoring can give U.S. companies, as soon as one company in an industry does it, the others are put under pressure to lower their prices—and offshoring might be the only way for some to lower costs enough to do so.	 Shareholders	Business agility and responsiveness: When companies rely on operations halfway around the world, marketplace trends and customer service matters.
 Shareholders	Support for local customers around the world: Some companies say that as they expand into other countries, they have no choice but to hire overseas employees in order to support local customers.	 Shareholders	Knowledge transfer and theft risk: By hiring other companies to perform technical and professional services, U.S. companies transfer important knowledge to these other countries—making them more competitive and potentially depleting the pools of expertise in the United States. Offshoring can also increase the risks of product piracy and theft of intellectual property.
 U.S. economy	U.S. competitiveness: Proponents say that offshoring is crucial to the survival of many U.S. companies and that it saves other U.S. jobs by making U.S. companies more competitive in the global marketplace.	 U.S. economy	

Top 10 Factors, Reshoring + FDI, 2010-2017					
Rank	Negative Offshore Factor	Citings	Rank	Positive Domestic Factor	Citings
1	Quality/rework/warranty	292	1	Government Incentives	527
2	Freight cost	196	2	Proximity to customers/market	493
3	Total cost	147	3	Skilled workforce training/availability	446
4	Delivery	100	4	Image/brand Made in USA	398
5	Inventory	91	5	Eco-system synergies	336
6	Rising Wages	88	6	Lead time/Time to market	251
7	Supply chain interruption risk/Natural disaster risk/Political instability	78	7	Infrastructure	239
8	Intellectual property risk	64	8	Automation/technology	211
9	Communications	61	9	Manufacturing/engineering joint innovation (R&D)	155
10	Green considerations	53	10	Higher productivity	141

Source: <https://www.industryweek.com/economy/reshoring-rise-what-it-means-trade-debate>

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What we should be focusing on is not reshoring but 'rightshoring', making sure we put things in the right place

Janet Godsell, professor of operations and supply chain strategy at Warwick

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Supply Chain Management

Supply Chain

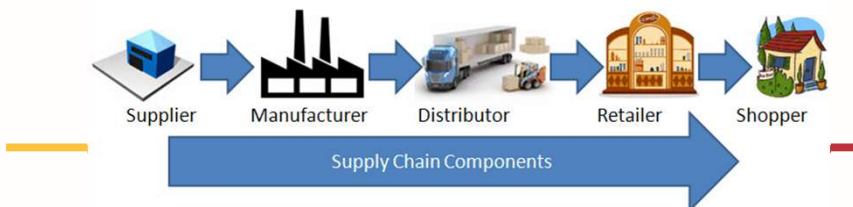
A set of connected systems that coordinates the flow of goods and materials from suppliers all the way through to final customers

Supply chain management (SCM)

The business procedures, policies, and computer systems that integrate the various elements of the supply chain into a cohesive system

Goal

Getting the right materials at the right price in the right place at the right time for successful production



Strategic Impact of SCM

- ✓ Managing risks
- ✓ Managing relationships
- ✓ Managing trade-off
- ✓ Promoting sustainability



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Supply Chain Systems

Inventory

Goods and materials kept in stock for production or sale

Inventory Control

Determining the right quantities of supplies and products to have on hand and tracking where those items are

Procurement

The acquisition of the raw materials, parts, components, supplies, and finished products required to produce goods and services

Lead Time

A period the elapses between placing the supply order and receiving materials

Material requirements planning (MRP)

Manufacturing resource planning (MRP II)

Enterprise resource planning (ERP)

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Production and Operations Management



Production and Operations Management

Overseeing all the activities involved in producing goods and services

Productivity

The efficiency with which an organization can convert inputs to outputs

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Lean Systems

Systems (in manufacturing and other functional areas) that maximize productivity by reducing waste and delays

Just-in-Time (JIT)

Inventory management in which goods and materials are delivered throughout the production process right before they are needed

JIT → Inventory = "0"

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COLUMN

Today's supply chains are too lean

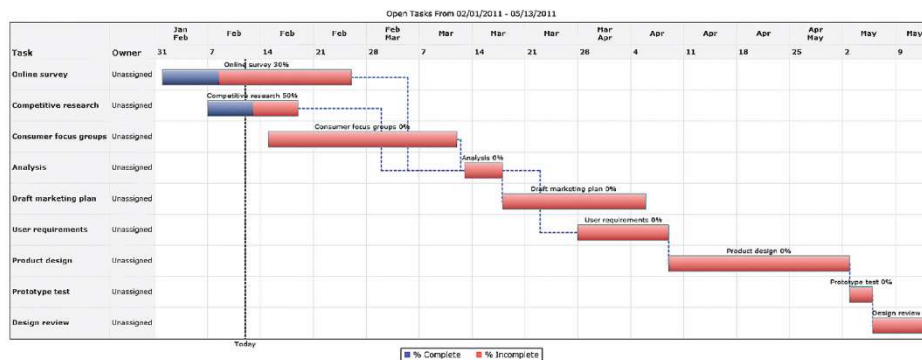
The COVID-19 pandemic has highlighted the dangers of just-in-time principles.



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Gantt Charts for Project Management



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Types of Production

Mass Production

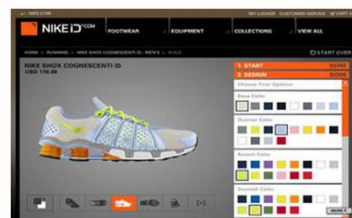
The creation of identical goods or services, usually in large quantities

Customized Production

The creation of a unique good or service for each customer

Mass Customization

A manufacturing approach in which part of the product is mass produced and the remaining features are customized for each buyer



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Types of Production (cont'd)

Customized product

Small-batch
production



Mass
production

Flexible
production
(mass
customization)

Postponing the task
of differentiating a
product for a specific
customer until the
latest possible point
in the supply network

Standardize product

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CASE STUDY: The Story of Zara – the Speeding Bullet



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