2018 LOA University
Supply Chain Management - Introduction

9 October 2018
Oklahoma City, OK

William A. Cunningham, Ph.D.
Professor of Logistics and Supply Chain Management and Program Director LSCM
(937) 255-6565 ext 4283
william.cunningham@afit.edu

Overview

Best Supply Chain Management Programs – 2018

AF Supply Chain Management Challenges

What is SCM?

Supply Chain Operations Reference (SCOR) Model
- **Plan, Source, Make, Deliver, Return, Enable**

Supply Chain Management: Processes, Partnerships, Performance
- **Process Links**
- **Supplier Relationship Management**
- **Customer Relationship Management**
- **Demand Management**
- **Order Fulfillment**
- **Customer Service Management**
- **Manufacturing Flow Management**
- **Returns Management**

AF Supply Chain Management

Identifying Challenges

The AFIT of Today is the Air Force of Tomorrow.

AFIT
Air Force Institute of Technology

13+

SUPPLY CHAINS COMBINED TO EQUAL AF INVENTORY SIZE ($309B)

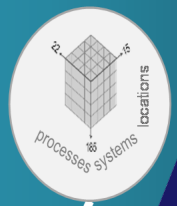
5+

COMMERCIAL FLEETS COMBINED TO EQUAL AF FLEET SIZE (5,137)

PANOPLY OF MANDATES

2024

PROCESSES SUPPORTED BY 300 LOG IT SYSTEMS



13x IT SPEND

WALMART SPENDS 13X MORE ON SUPPLY CHAIN IT THAN USAF (26% VS. 2%).

AGE OF IT

AVERAGE AGE OF 18 YRS. MANY MAINFRAME SYSTEMS DATE BACK TO 1960S.

18

IT RISKS

80% OF LOGISTICS PROCESSES SUPPORTED BY 0-GEN TECHNOLOGY (COBOL OR SIMILAR).

AGILE TECH INSERTION

AF IT CYCLE TIMES MEASURED IN YEARS (5.9-7.3YRS) VS. MONTHS FOR COMMERCIAL (6 WEEK SPRINTS).

Ms. Kim Brown, HQ AFMC/A4N; Enterprise Logistics Executive Capstone Course (12 Sep)

What is SCM?

The curriculum includes courses in statistics, operations research, organization and management theory, inventory systems, transportation and strategic mobility, maintenance and production management, financial management, and economics.

Program integrates topics from manufacturing operations, purchasing, transportation, and physical distribution into a unified program. The program offers integration among these critical, value-adding components to enhance global competitiveness.

Refers to the processes of creating and fulfilling demands for goods and services. It encompasses a trading partner community engaged in the common goal of satisfying end customers.

The business process of managing the complex interaction of products, materials, equipment, labor, and cash as they flow through the supply chain and fulfill customer demand.

What is SCM?

Listed Areas of Interest

Creating and Fulfilling Demands
Economics
Financial Management
Inventory Systems
Global Competitiveness
Maintenance and Production Management
Manufacturing Operations
Operations Research
Organization and Management Theory
Purchasing
Satisfying End Customers
Statistics
Trading Partners
Transportation and Physical Distribution
Transportation and Strategic Mobility

Managing the complex interaction of products, materials, equipment, labor, and cash as they flow through the supply chain and fulfill customer demand.

What is SCM?

DoDM 4140.01-V1, February 10, 2014

Supply Chain - The linked activities associated with providing materiel from a raw material stage to an end user as a finished product.

Materiel Management - That phase of military logistics that includes managing, cataloging, demand and supply planning, requirements determinations, procurement, distribution, overhaul, and disposal of materiel.

SUPPLY CHAIN STRATEGIES

(4) Use the supply chain operational reference processes of plan, source, make and maintain, deliver, and return as a framework for developing, improving, and conducting materiel management activities to satisfy customer support requirements as efficiently as possible.

SUPPLY CHAIN PROCESSES

a. Conduct demand and supply planning to optimize the use of DoD supply chain resources in meeting established support strategies and collaborate between supply support providers and their customers. Size secondary item inventories to minimize total DoD supply chain costs while meeting peacetime, war, and other high tempo requirements.

SUPPLY CHAIN BUSINESS PRACTICES

a. Continually monitor and adopt or adapt emerging business practices to provide best-value, secure materiel and services, improve DoD supply chain performance, and reduce total life-cycle systems cost.

What is SCM?

DoDM 4140.01-V1, February 10, 2014

Notable Directed Activities

Structure materiel management to provide responsive, consistent, and reliable support to the warfighter during peacetime and war.

Consider all life-cycle costs associated with materiel management, including acquiring, distributing, transporting, storing, maintaining, repairing, protecting, and disposing.

Employ risk management strategies to identify and assess potential supply chain disruptions.

Perform materiel sourcing and acquisition, manage sourcing infrastructure, and apply total life-cycle support management to supply chain materiel management.

Manage requisitions, orders, distribution depots and other storage locations, and transportation networks and other delivery infrastructure.

Apply the highest levels of materiel accountability and asset visibility to the stewardship of critical safety items (CSI) and controlled inventory items (CII).

SCM Overview Summary

Supply Chain Operations Reference (SCOR) Model

The AFIT of Today is the Air Force of Tomorrow.

SCOR Practices

http://www.apics.org/docs/default-source/scc-non-research/apicsscc_scor_quick_reference_guide.pdf

A practice is a unique way to configure a process or a set of processes. The uniqueness can be related to the automation of the process, a technology applied in the process, special skills applied to the process, a unique sequence for performing the process, or a unique method for distributing and connecting processes between organizations. All practices have links to one or more processes, one or more metrics and, where available, one or more skills.

SCOR Practices are classified to simplify identification of practices by area of interest:

Business Process Analysis/Improvement
Customer Support
Distribution Management
Information Management
Inventory Management
Material Handling
New Product Introduction
Order Engineering (ETO)
Order Management
People Management (Training)

Planning and Forecasting
Production Execution
Product Lifecycle Management
Purchasing /Procurement
Reverse Logistics
Risk/Security Management
Sustainable Supply Chain Management
Transportation Management
Warehousing

SUPPLY CHAIN STRATEGIES

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DoDM 4140.01-V1, February 10, 2014

Supply Chain Operations Reference (SCOR) Model

Supplier Side Activities

Upstream Activities

Focal Firm

Downstream Activities

Customer Side Activities

SCOR Model Core Processes

Plan | **Source** | **Make** | **Deliver** | **Return** | **Enable**

Business Process Analysis/Improvement
Customer Support
Distribution Management
Information Management
Inventory Management
Material Handling
New Product Introduction
Order Engineering (ETO)
Order Management
People Management (Training)

Planning and Forecasting
Production Execution
Product Lifecycle Management
Purchasing /Procurement
Reverse Logistics
Risk/Security Management
Sustainable Supply Chain Management
Transportation Management
Warehousing

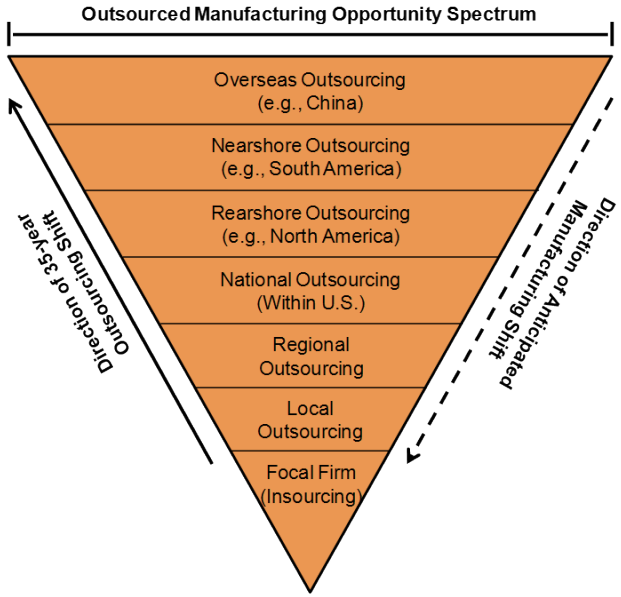
DoDM 4140.01-V1, February 10, 2014

SCOR Model - Example

Research Baseline

--Outsourced manufacturing was seen as a way to minimize or eliminate those manufacturing functions which were not considered a core competency or which did not directly add to competitive advantage.

35-year Outsourcing Shift … and Anticipated Manufacturing Shift



Outsourcing Drivers (23)

-Contract Strategy
-Cost Savings/Reduction
-Focus on Core Competence
-Global Supply Chain Risks
-Globalization of Business
-Human Resources
-Improve Productivity
-Integration of Info. Technologies
-Just-in-Time Complexities
-Leverage Supply Chain Management
-Need for Expertise
-Outsourcing Risks
-Performance Consequences
-Proprietary Systems Profitability
-Quality
-Rapid Growth
-Regulatory Change
-Service Improvement
-Supplier Market Power
-Supply Chain Infrastructure Investment
-Supply Chain Integration
-Technical Advances
-Upgrade Information Technologies

Protocols:
Sampling Strategy – Participants (Firm-level Unit of Analysis) and cases were selected within the manufacturing and manufacturing material support industries for analysis as a means for controlling for variation across industries.

23 Executive-level Research Collaboration Partners:
AeroJet, American Axel Manufacturers, Boeing, Chrysler, Cox Manufacturing, Deere & Company, Evenflow, E&R Industrial, GEXPRO, Grainger, Kimberly Clark Professionals, Lockheed Martin, M2 Global Technologies, PEPSICO, Pratt & Whitney, Royal Australian Air Force, Stanley Proto, Storeroom Solutions, Sulzer Metco, The Triumph Group, Westinghouse and WESCO.

Process:
Semi-structured Interviews – Participant assessment of 23 ‘outsourcing’ drivers and relationship to ‘insourcing’ decision(s) – Digitally Recorded and Transcribed.

Iterative Coding, 14 Unique Case Studies, Within / Cross Case Analysis Performed

Insourcing Drivers (14 Case Studies)

Tactical Influences—factors closely linked to firm-level achievement of near-term customer service, financial management, production, and resource utilization goals:
-Cost Savings/Reduction; Performance Consequences; Improve Productivity; Need for Expertise; Quality

Strategic Influences—factors for which the firm's managers develop and position resources in response to anticipated mid-term changes in internal or external conditions:
-Focus on Core Competence; Service Improvement; Supplier Market Power; Technical Advances; Global Supply Chain Risks; Outsourcing Risks; Just-in-Time Complexities; Supply Chain Infrastructure Investment; Regulatory Change; Rapid Growth

Enabling Influences—factors which support achievement of the firm's long-term, intra- or inter-firm objectives:
-Leverage Supply Chain Management; Supply Chain Integration; Contract Strategy; Human Resources; Proprietary Systems Profitability; Globalization of Business; Integration of Info. Technologies; Upgrade Information Technologies

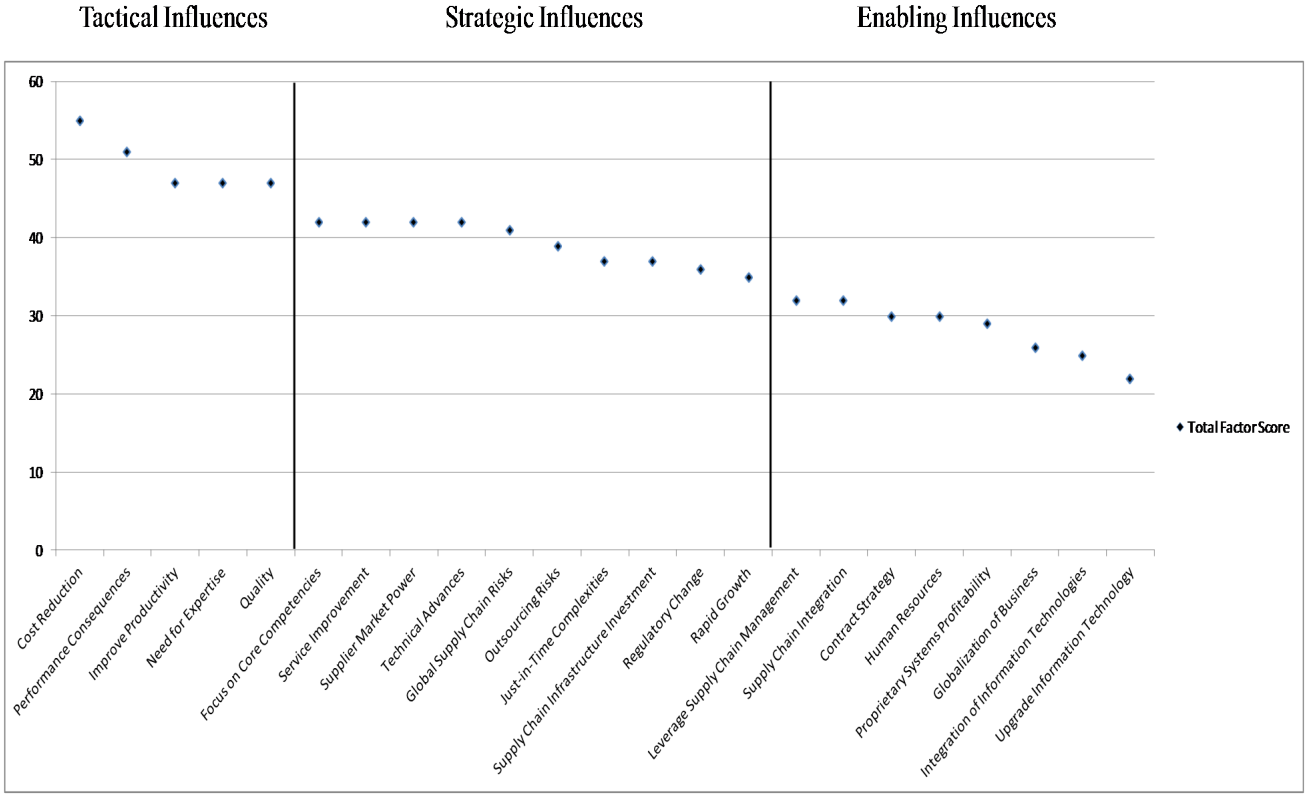
	Influential Grouping		
Insourcing Justification	*Tactical*	*Strategic*	*Enabling*
#1 Influence	**11**	**3**	**0**
#2 Influence	**9**	**5**	**0**
#3 Influence	**13**	**1**	**0**

SCOR Model - Example

Research Findings

The AFIT of Today is the Air Force of Tomorrow.

a. Manufacturing relocation decisions are primarily made in response to one or more trigger events: unanticipated costs increases from the manufacturer, inability of the manufacturer to consistently meet quality and delivery standards, and the need to improve the firm's internal equipment and capacity utilization to better distribute overhead costs

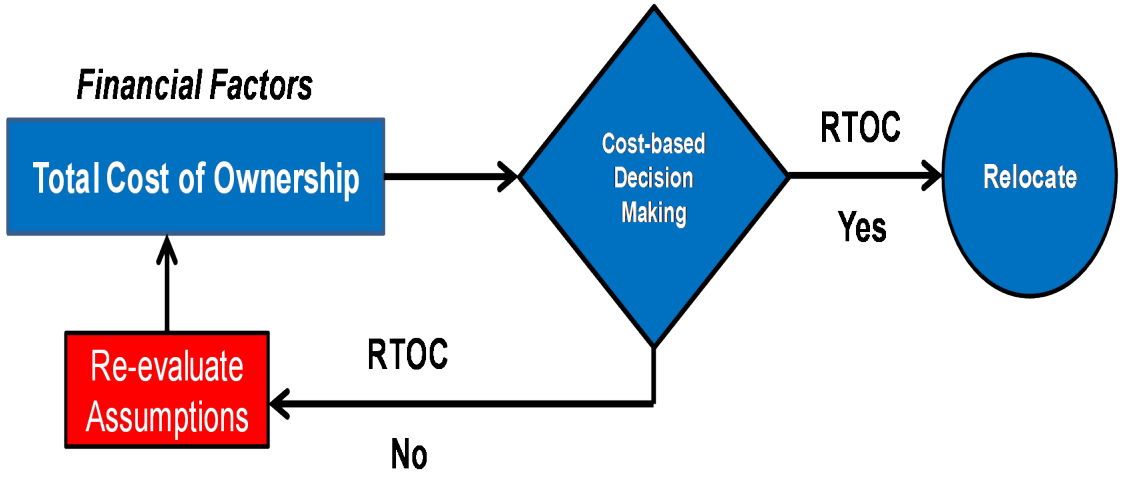


b. The current manufacturing relocation shift is **not** perceived by manufactures as a long-term business strategy (as is/was outsourcing)—seeking cost, quality, productivity improvements

SCOR Model - Example

Research Findings

Industry Perspective / Lessons Learned: Manufacturing relocation decisions based exclusively on models such as Total Cost of Ownership (TCO) will not deliver anticipated near-term costs savings



Some TCO models may include upwards of 20 or 30 different data elements which are required in order to populate the full model. For large firms, with experienced staffs qualified to create the objective financial data or develop assumption-driven financial data, running full-scale TCO models may be appropriate (Ellram and Voss, 1995)

SCOR Model - Example

Research Findings

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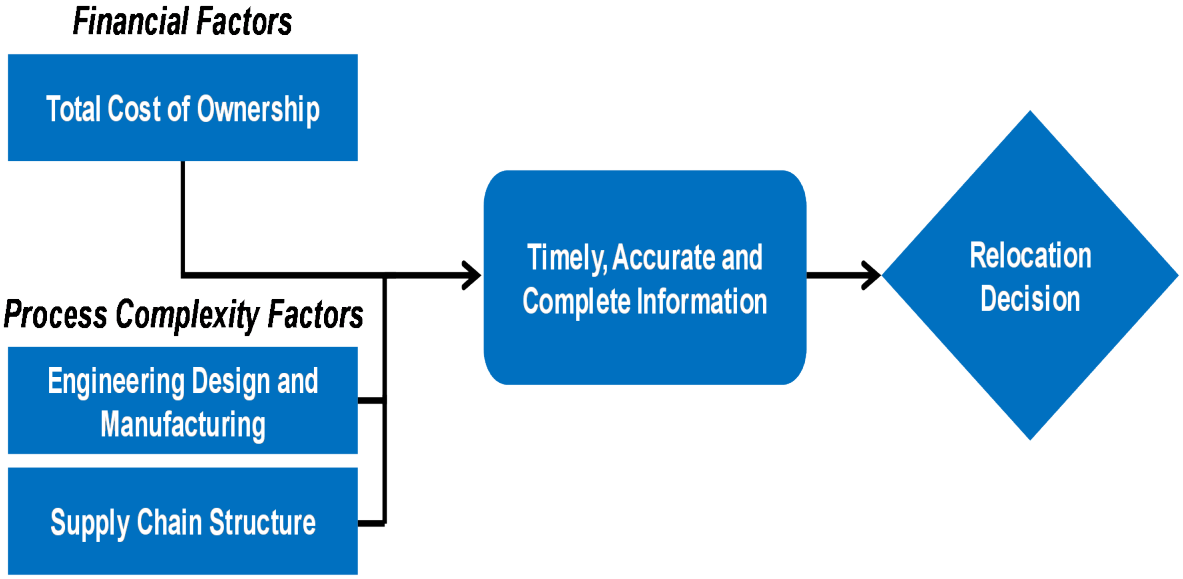
Firms must have access to information concerning the complexity of the outsourced manufacturer's manufacturing and supply chain processes in order to fully evaluate 'as-is' outsourced functions against 'to-be' manufacturing relocation opportunities.

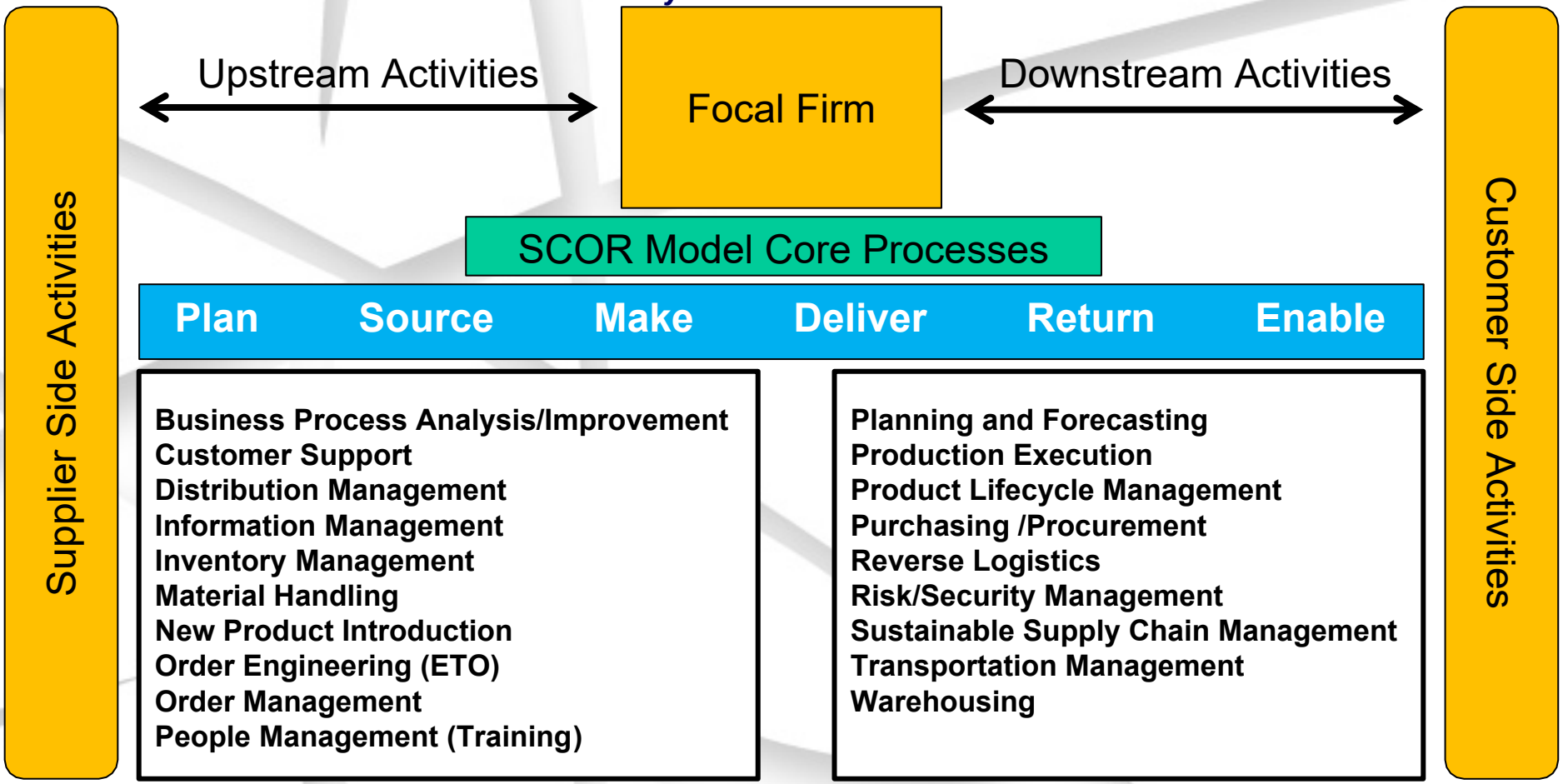


Multi-tiered upstream supply chain structures become more complex the longer they are in place and tend to add significant costs to manufacturing processes (Bozarth *et al.*, 2009).

Industry Perspective / Lessons Learned: Firms lacked a detailed understanding of process complexities embedded in their outsourced manufacturing relationships--needed to access process-related information in order to fully evaluate the 'as-is' manufacturer against any 'to-be' relocation opportunity.

SCOR Model - Discussion

The AFIT of Today is the Air Force of Tomorrow.



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DoDM 4140.01-V1, February 10, 2014

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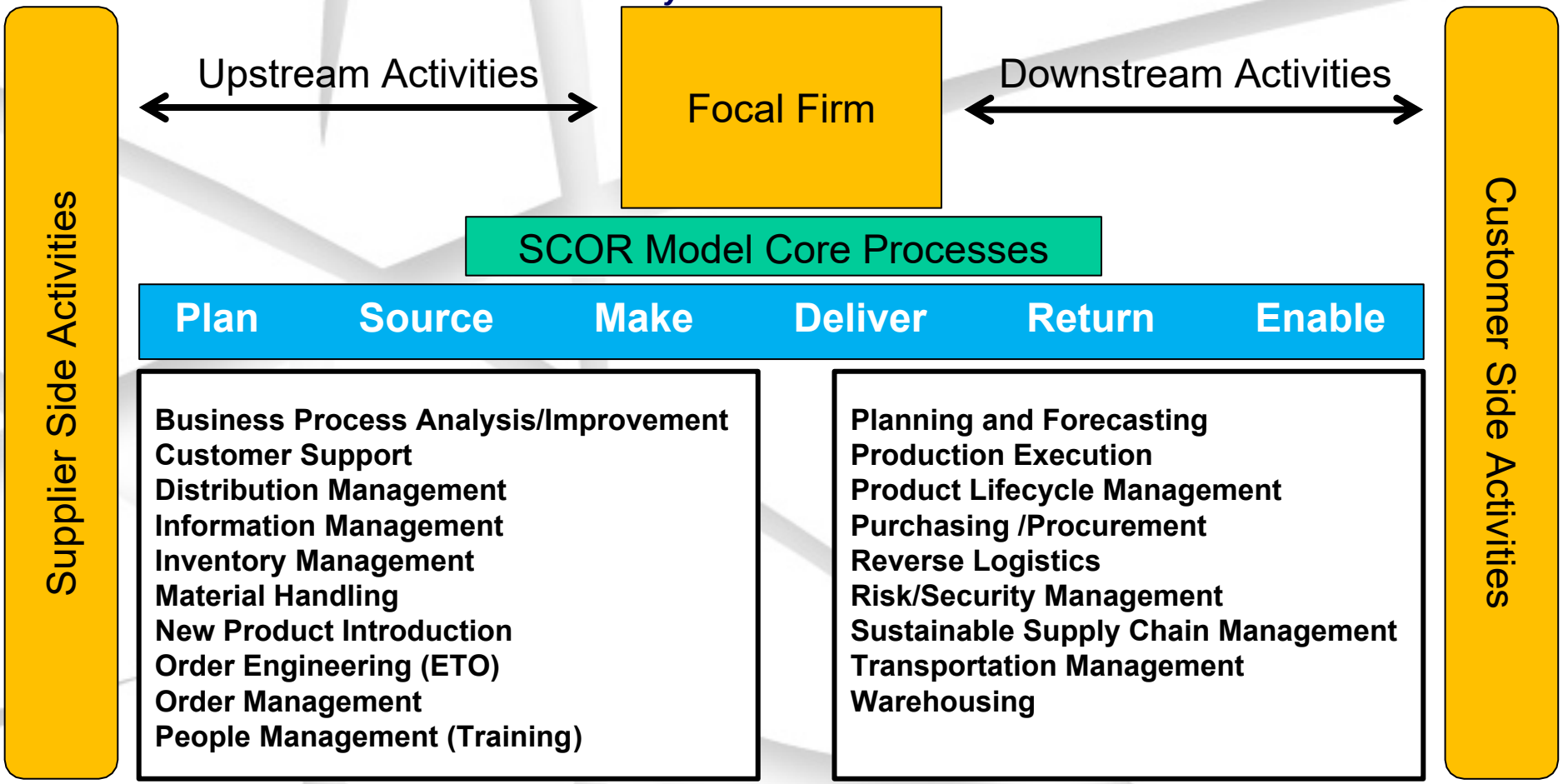

SUPPLY CHAIN BUSINESS PRACTICES *DoDM 4140.01-V1, February 10, 2014*

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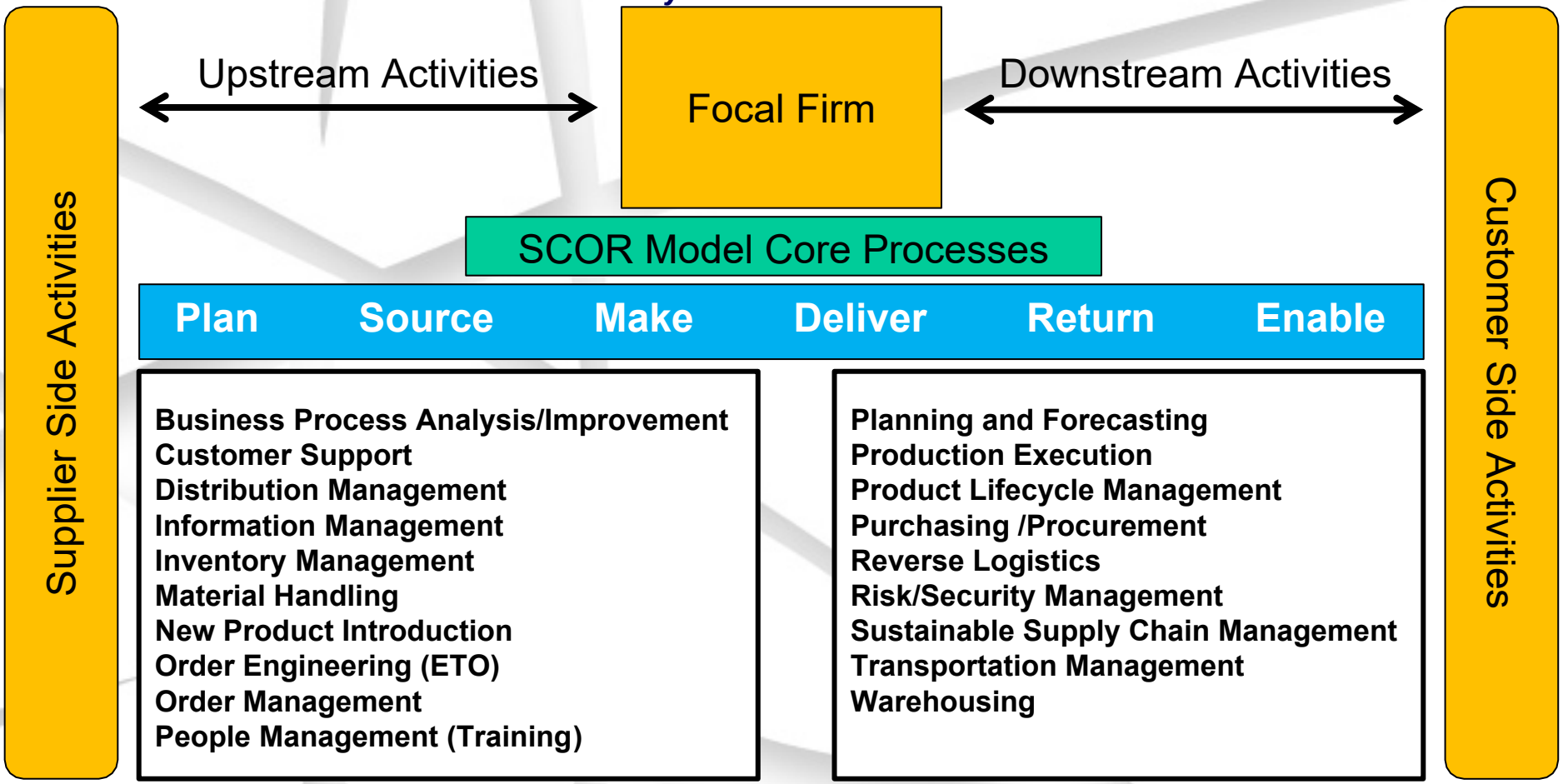

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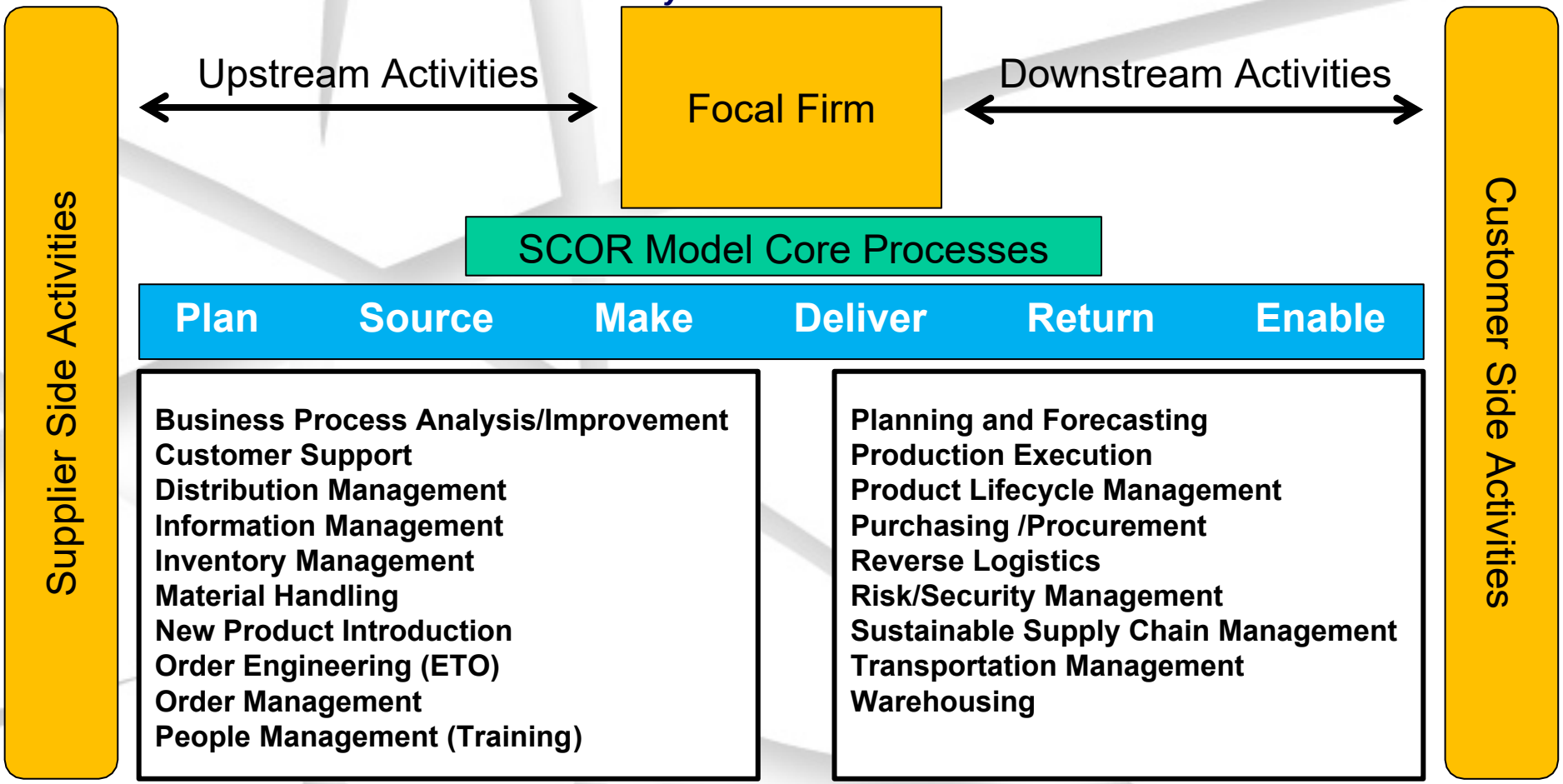

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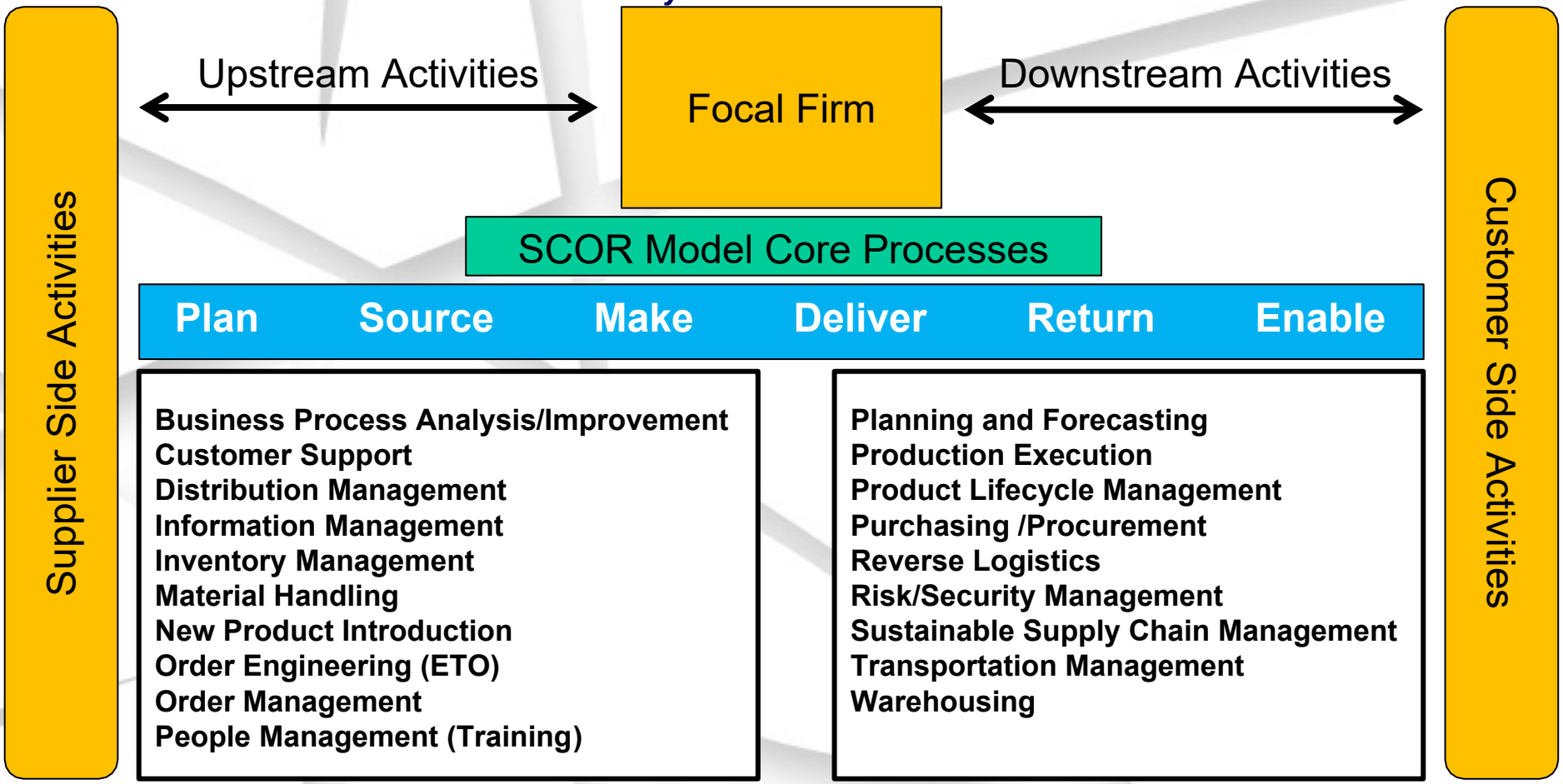

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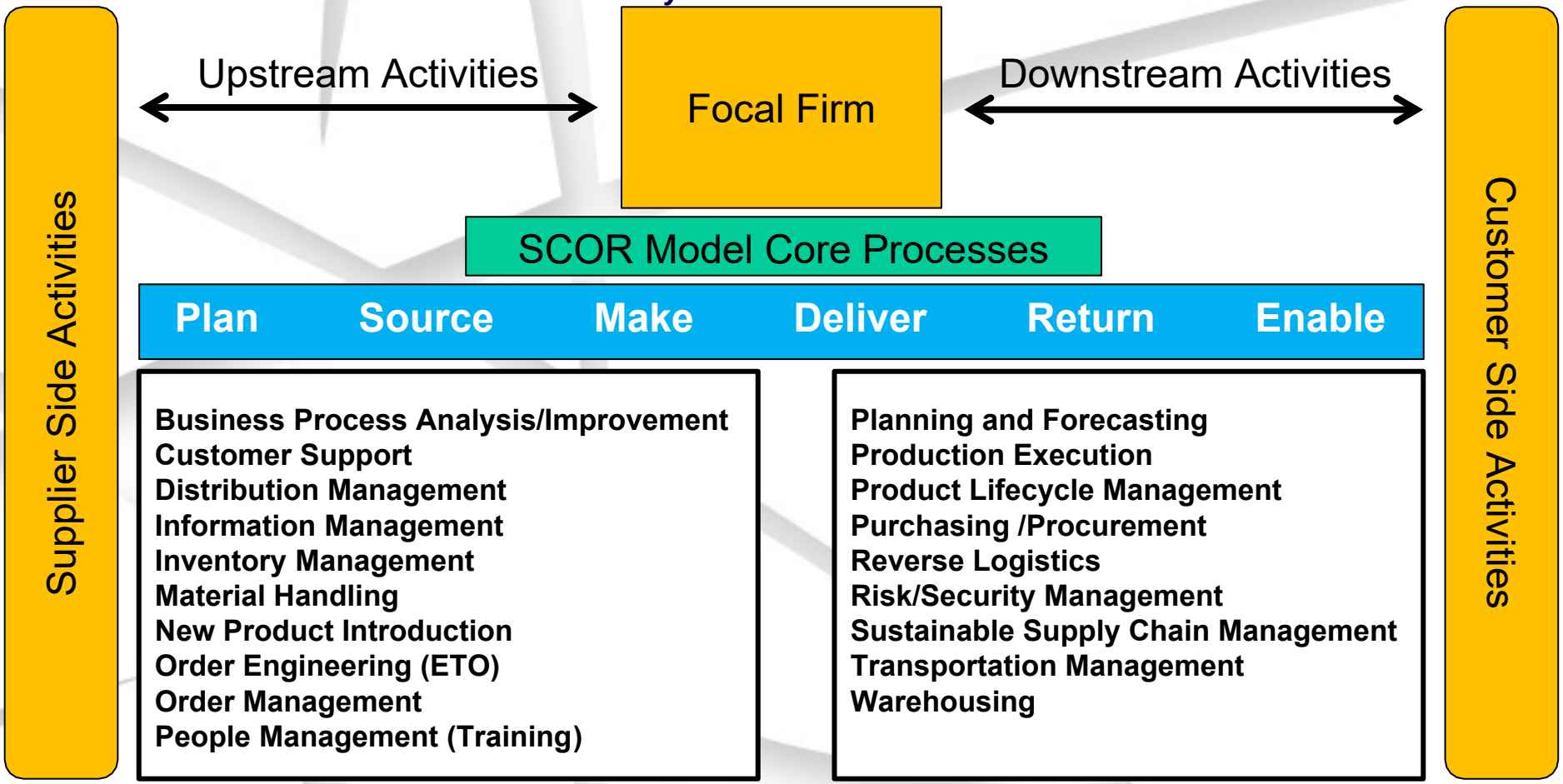

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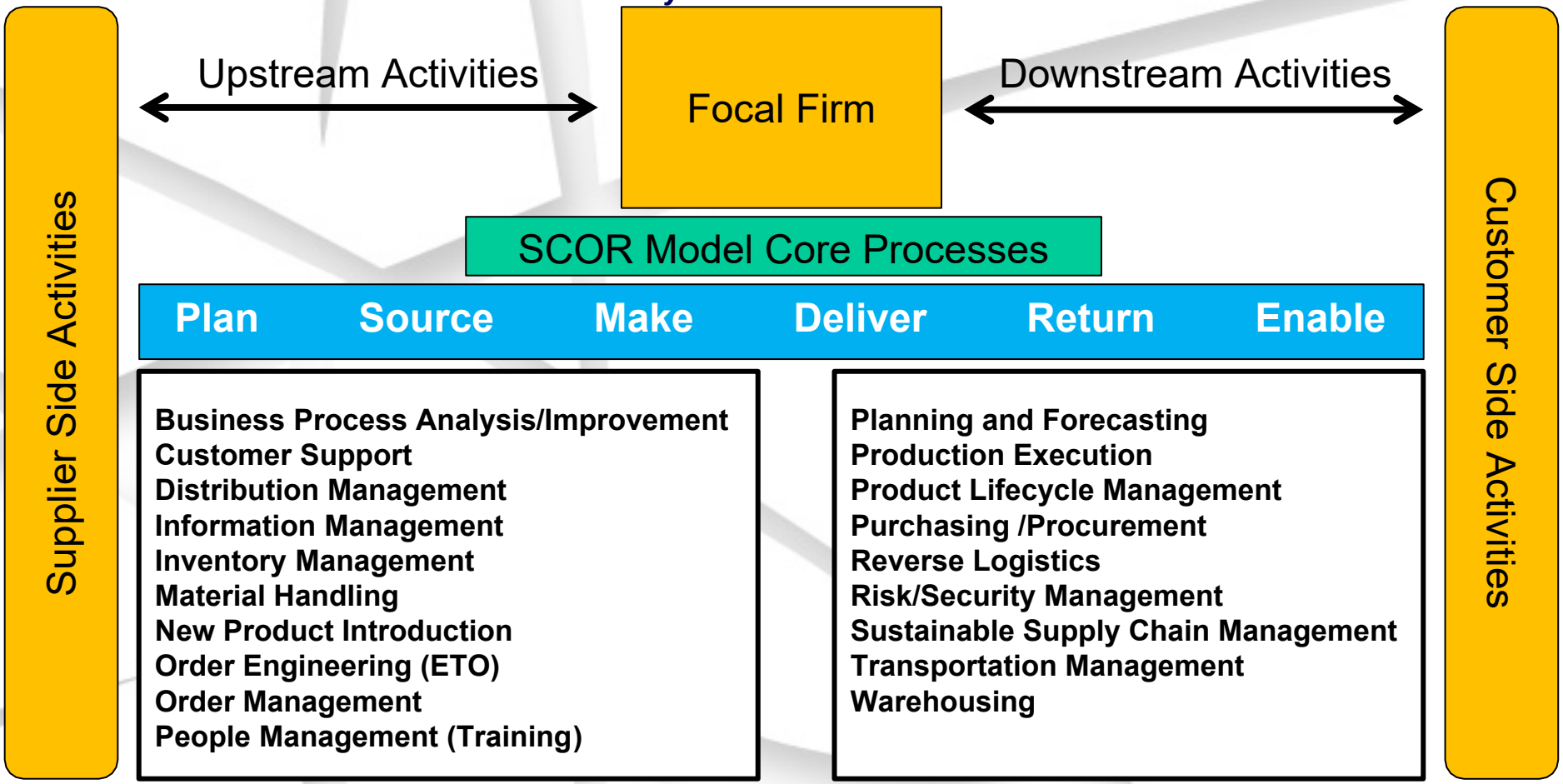
SCOR Model - Discussion



Apply the highest levels of materiel accountability and asset visibility to the stewardship of critical safety items (CSI) and controlled inventory items (CII).

SCOR Model Summary

Supply Chain Management: Processes, Partnerships, Performance

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The Supply Chain Management Processes

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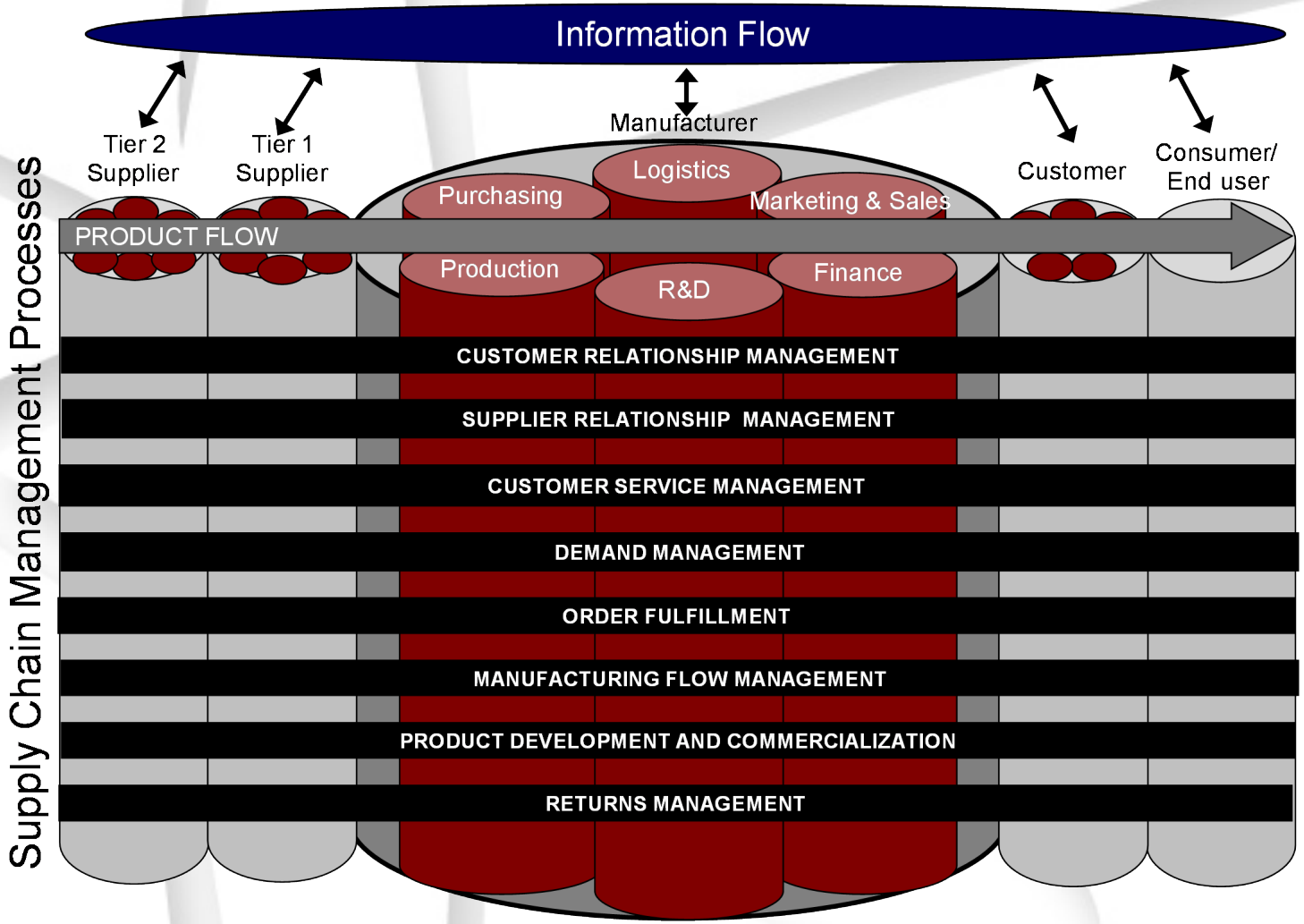

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Types of Inter-company Business Process Links

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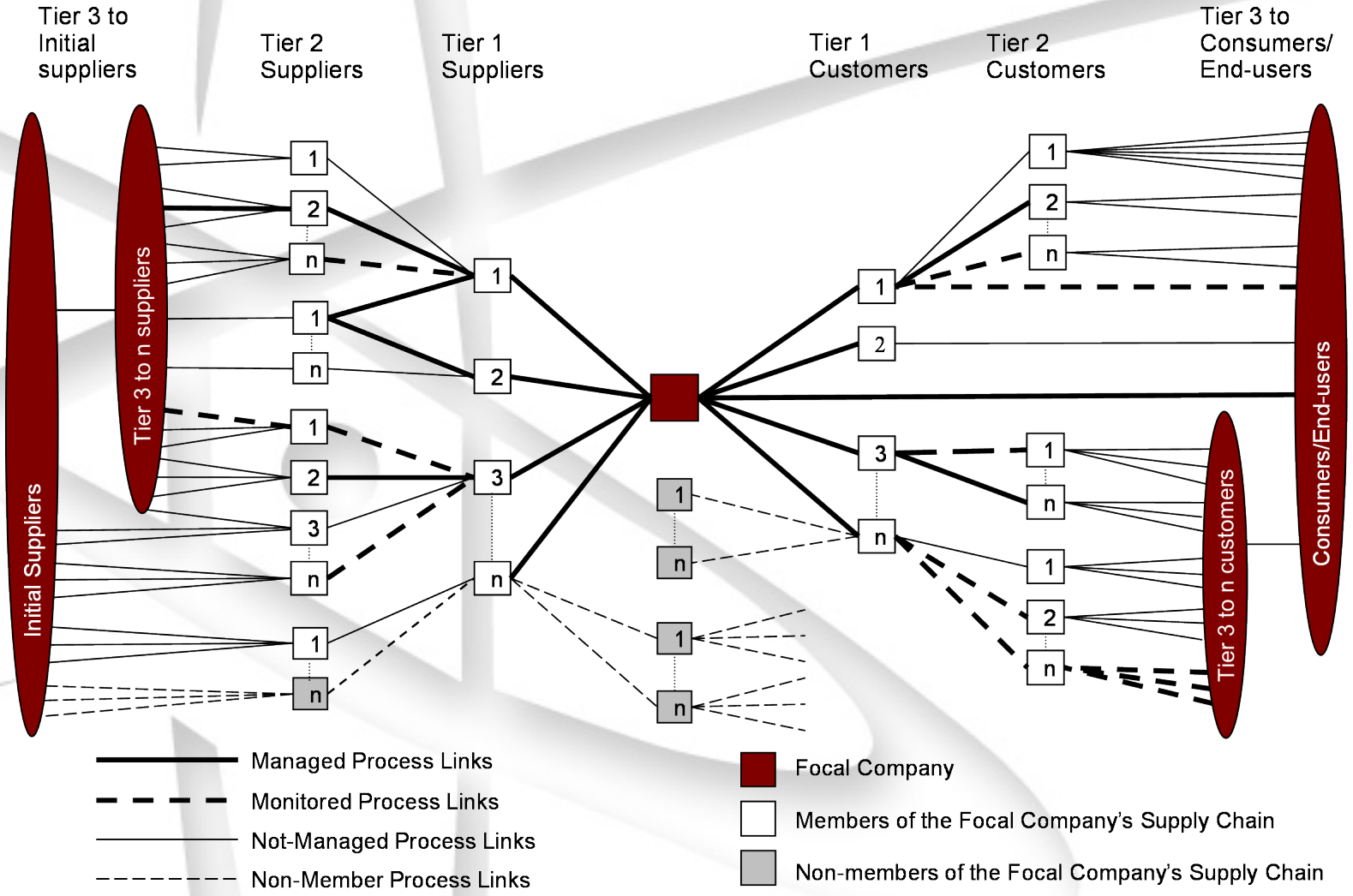
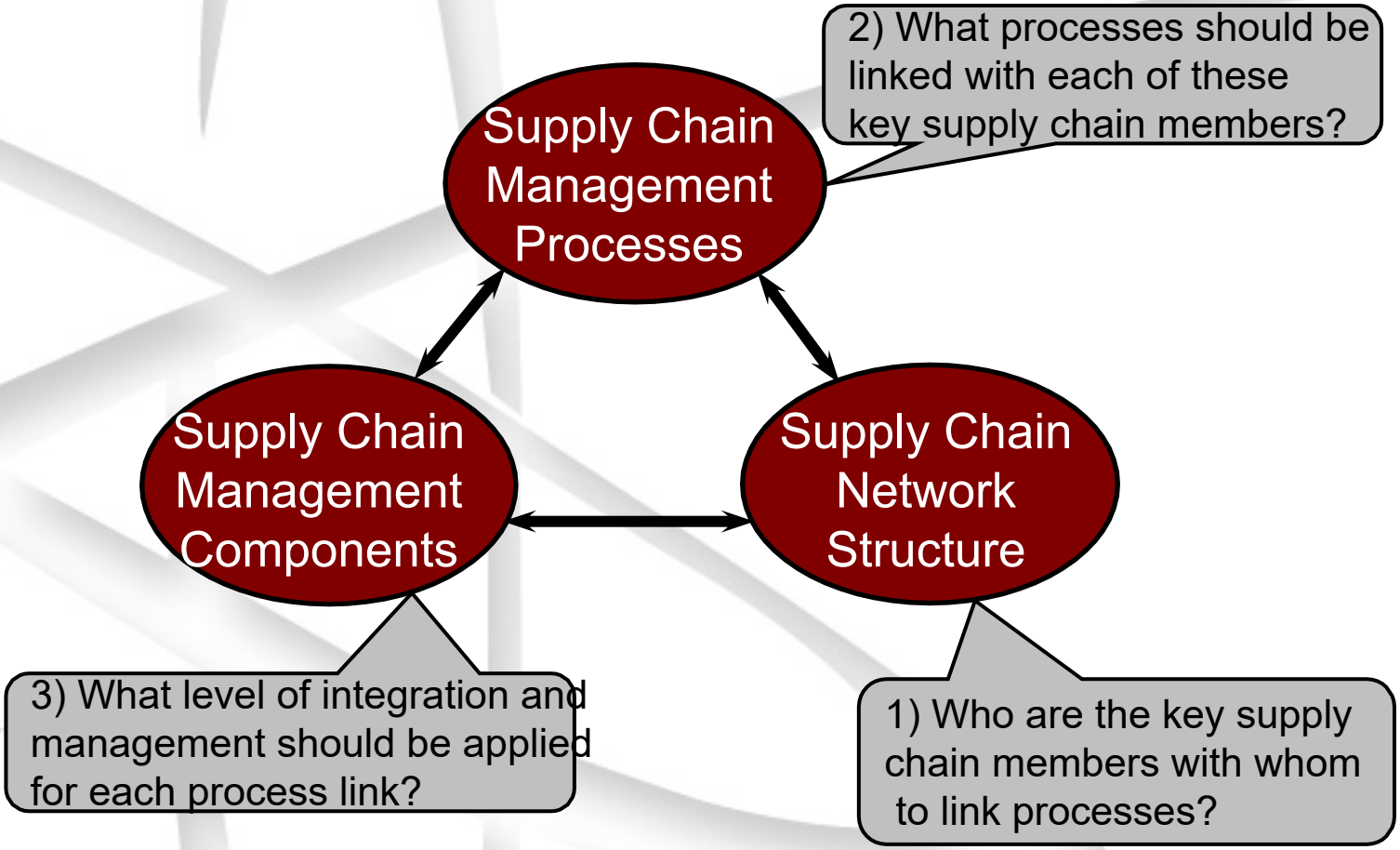


Supply Chain Management: Elements and Key Decisions



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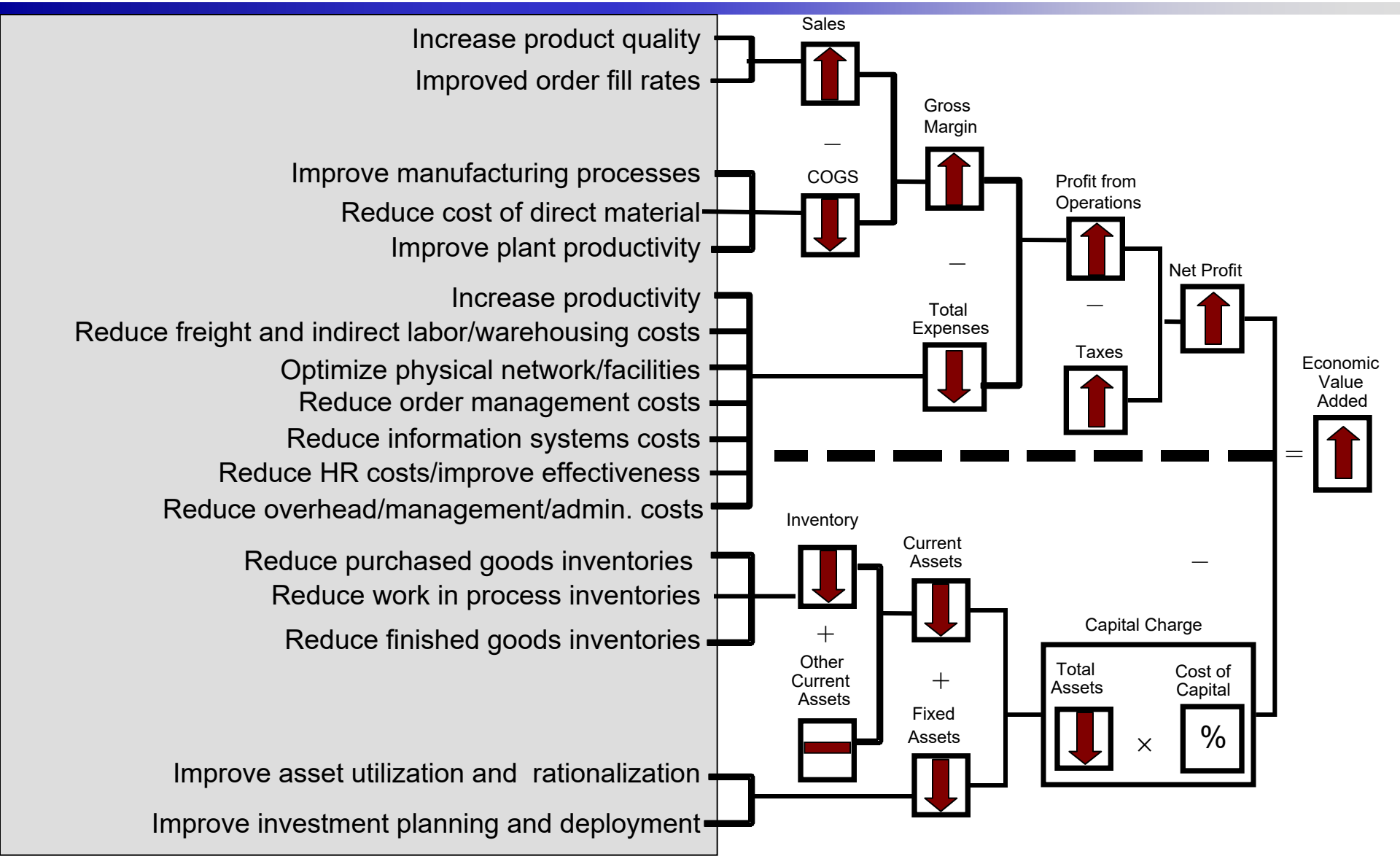
How SRM Affects EVA®



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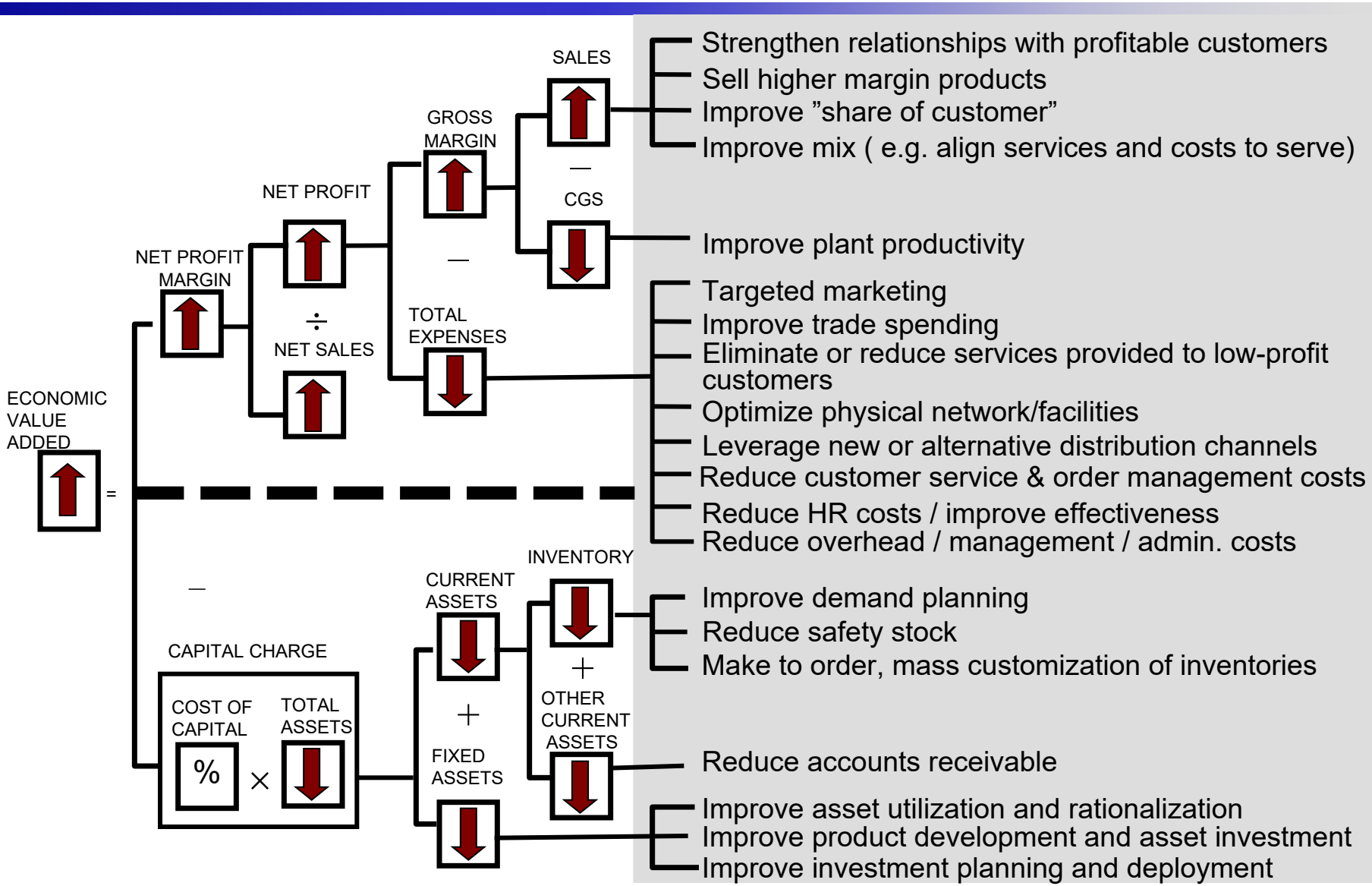
How CRM Affects EVA®



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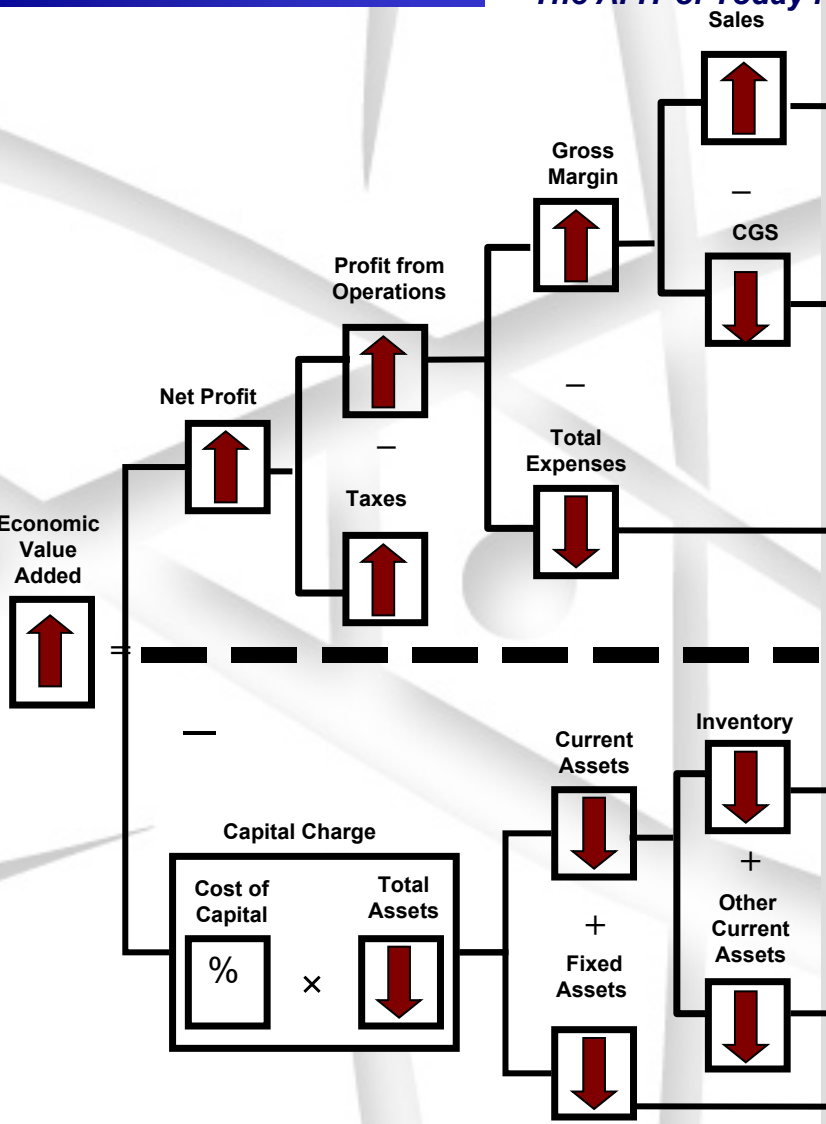
How Demand Management Affects EVA®



- Increase customer loyalty and repeat business
- Improve product availability
- Improve market share due to "fresher" product
- Reduce returns and markdowns
- Improve "share of customer"
- Lower cost of raw materials
- Reduce manf. costs due to improved scheduling
- Reduce storage and handling costs
- Fewer transshipments and lower redist. costs
- Fewer split orders
- Leverage transportation and freight consolidation
- Fewer expedited shipments
- Reduce non-cost-of-money components of inventory carrying costs
- Lower safety stocks
- Reduced obsolete inventory
- Reduce accounts receivable
- Improve asset utilization and rationalization
- Improve investment planning and deployment

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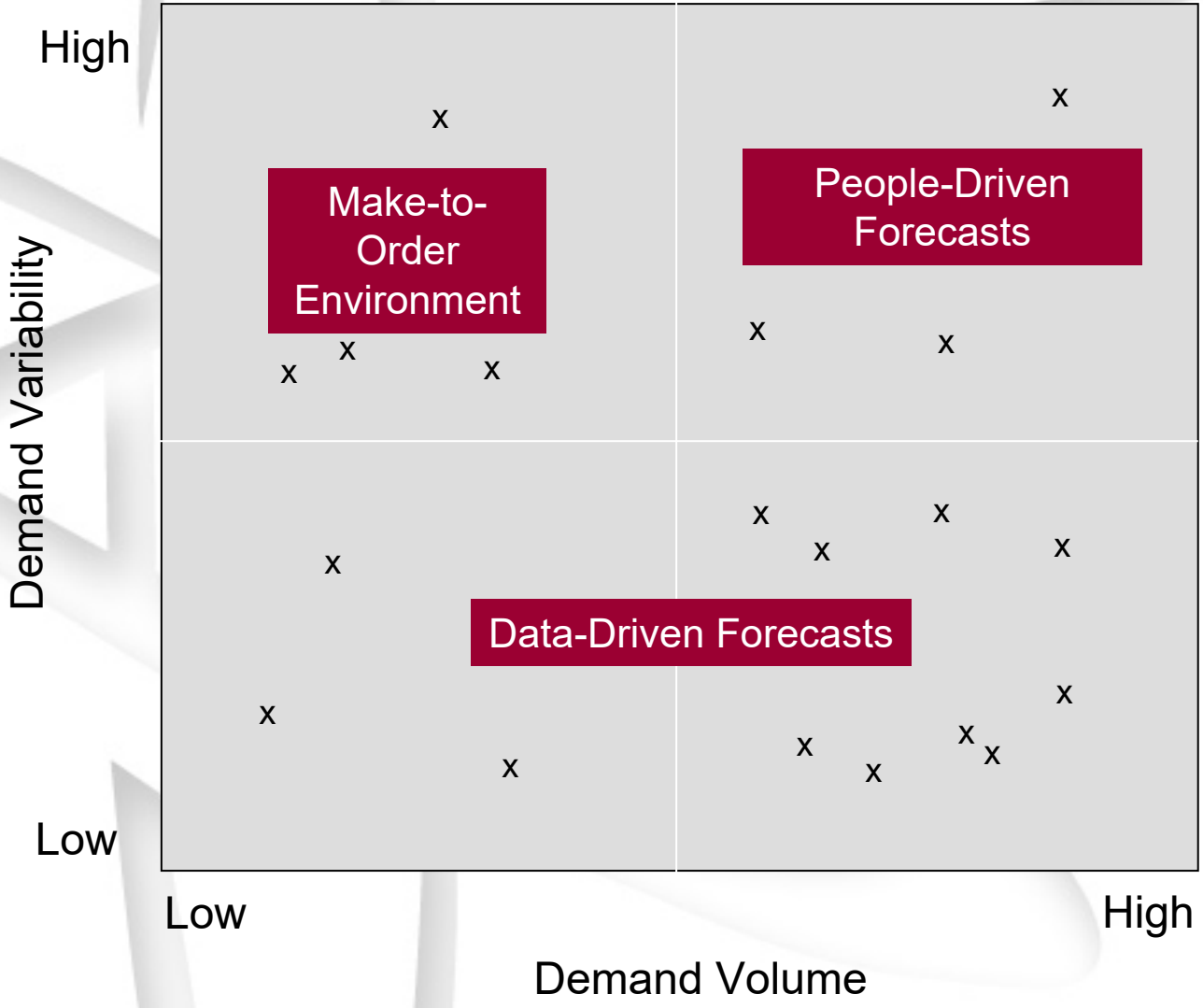
Forecasting Approaches



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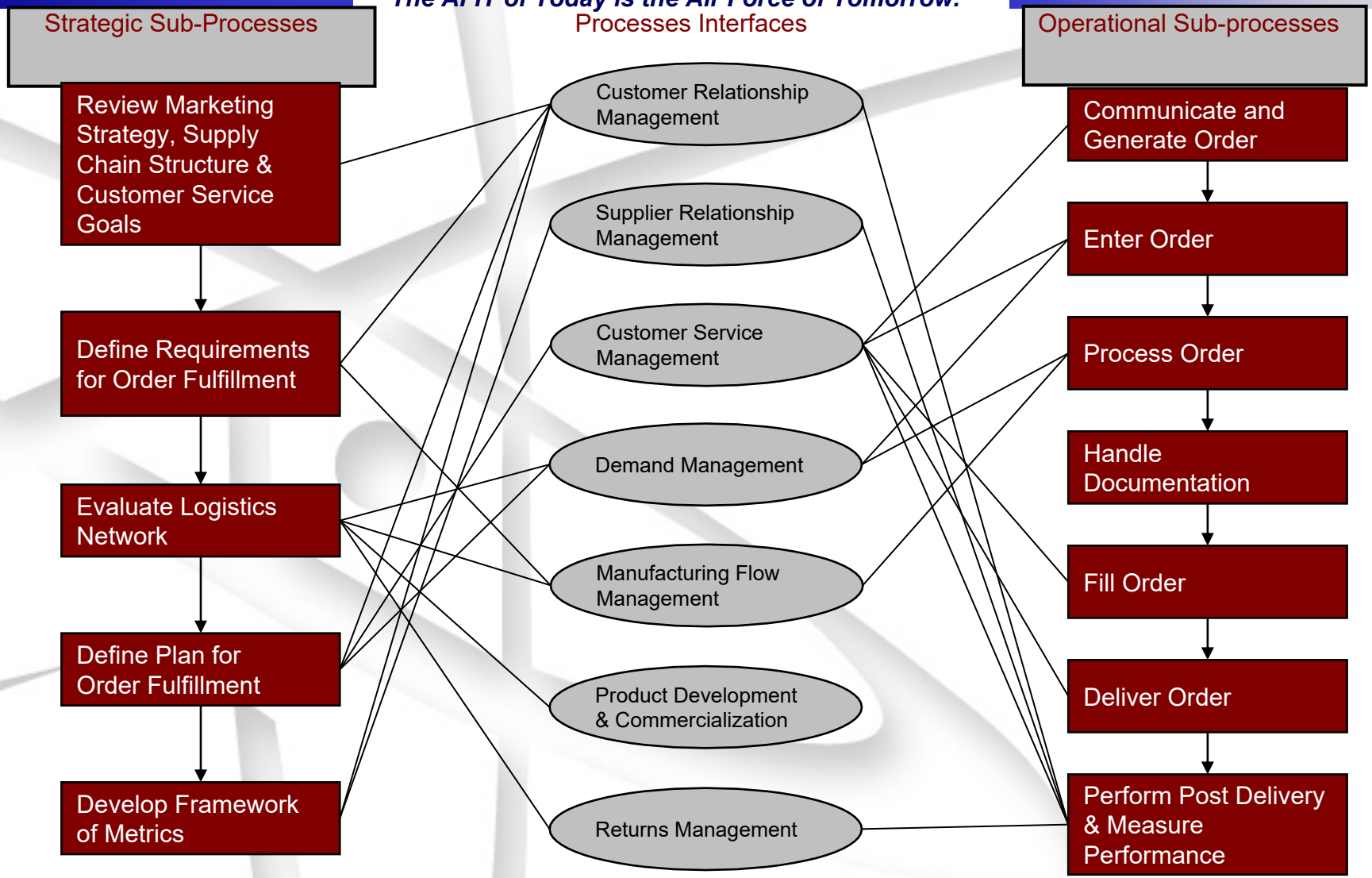
Order Fulfillment



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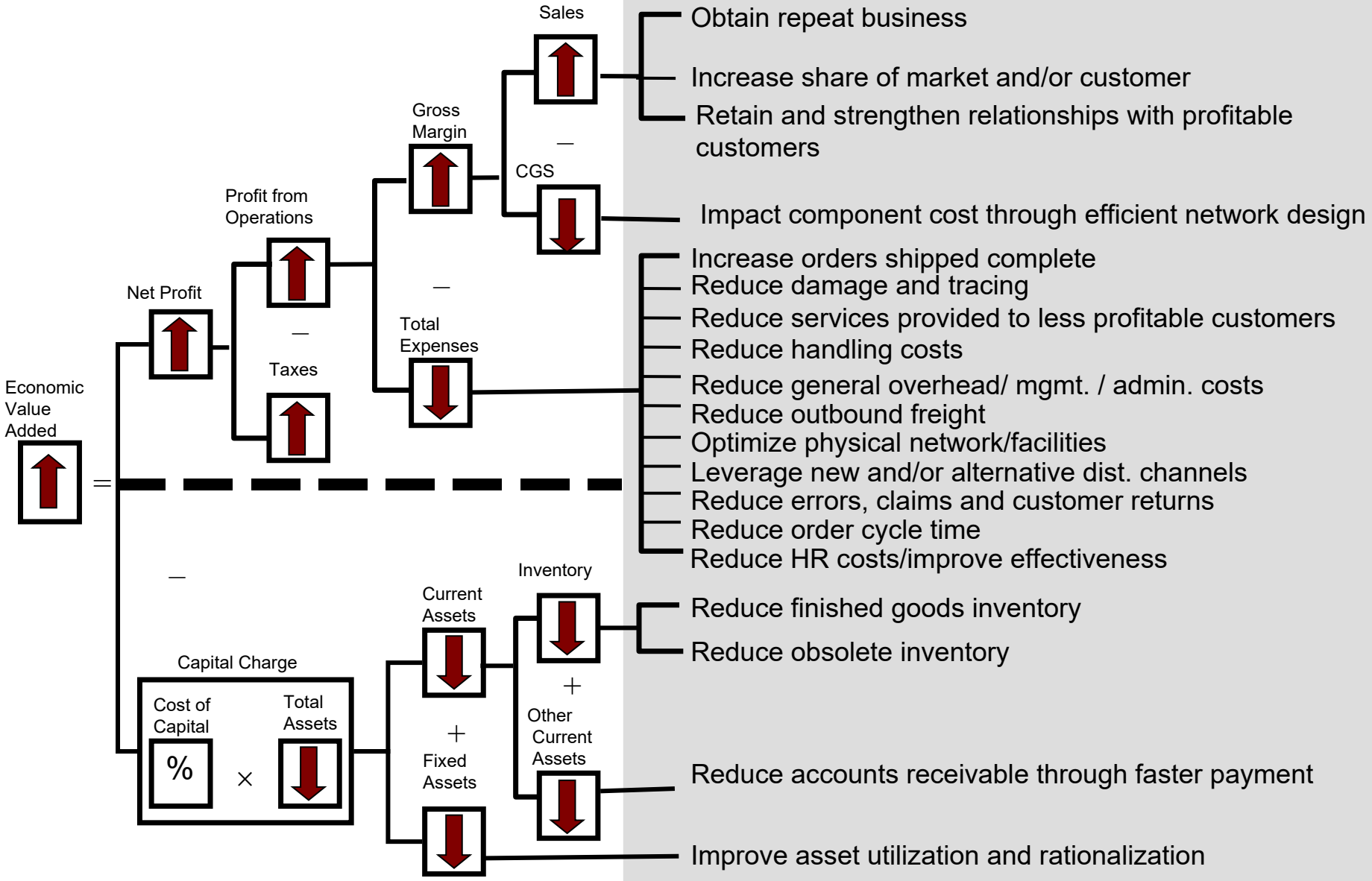
Order Fulfillment Affects EVA®



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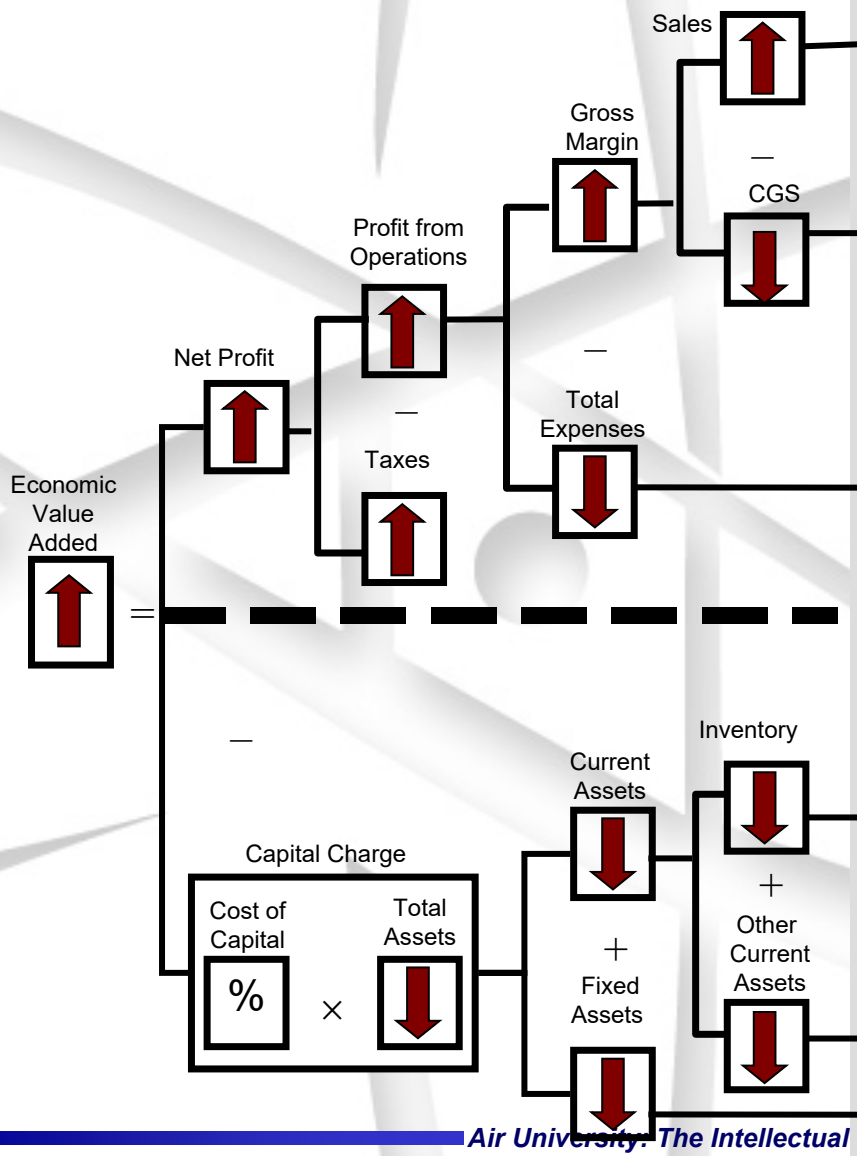
How CSM Affects EVA®



- Retain and strengthen relationships with key accounts
- Sell higher margin products
- Improve "share of customer"
- Avoid lost sales
- Reduce number of last minute production changes
- Reduce returned goods
- Eliminate claims and reduce customer complaints
- Streamline order processing and information flow with customer
- Reduce cost to serve the customer
- Improve management of warranty, replacement and repair programs
- Reduce tracking and tracing costs
- Leverage transportation and consolidate shipments
- Prevent stockouts and expedited shipments
- Reduce order processing & transportation costs
- Improve system accuracy-billing, quantities, products
- Improve forecasting and demand planning
- Reduce safety stock
- Identify and eliminate quality control problems
- Reduce accounts receivable
- Improve product development and asset investment
- Optimize equipment utilization

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Role of Technology

- Technology can help throughout the operational process.
  1. Streamlining the process
     - Takes days out of the order-to-cash cycle, improving cash flow
     - Improves customer service
     - Allows for inventory reductions
  2. Allows companies in the supply chain to integrate effectively
     - Reduces labor requirements
     - Improves customer service
     - Reduces error rates

- The value from the technology has to be measured against the cost.

- The people and the processes are ALWAYS critical.

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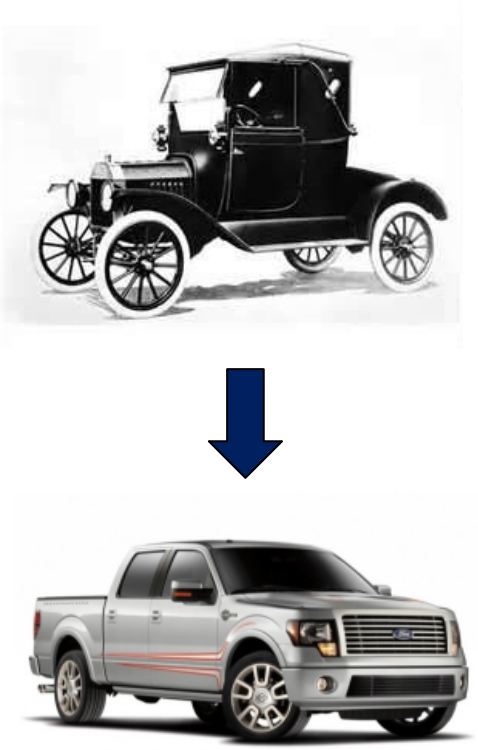
Forces for Change

The AFIT of Today is the Air Force of Tomorrow.

- Globalization
- Technology
- Shifts in channel power
- Growth in outsourcing
- New mentality
  - From: "We sell what we make"
  - To: "We make what we sell"
- Supply chain management



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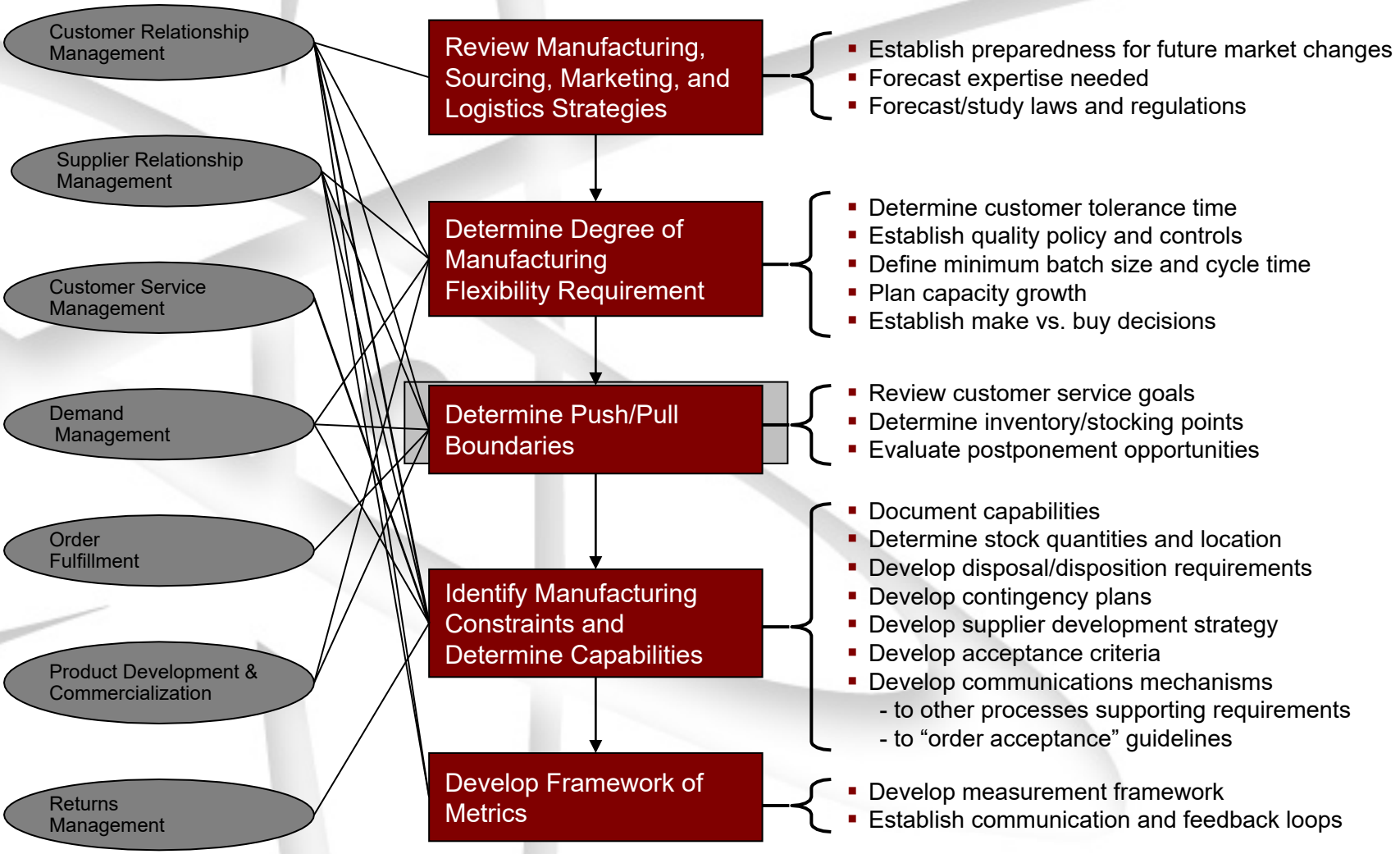
Strategic Manufacturing Flow Management Process



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Lean Manufacturing

- Characteristics:
  - Focus on perfect, first-time quality (zero defects)
  - Waste minimization
    - Overproduction
    - Waiting
    - Unnecessary transport
    - Overprocessing of parts
    - Inventories
    - Unnecessary movement by employees
    - Defective parts
  - Focus on continuous improvement, minimizing variability
  - Typically relies on short production plans

- Best applied to: Standardized, price-sensitive products with stable demand and long life cycles

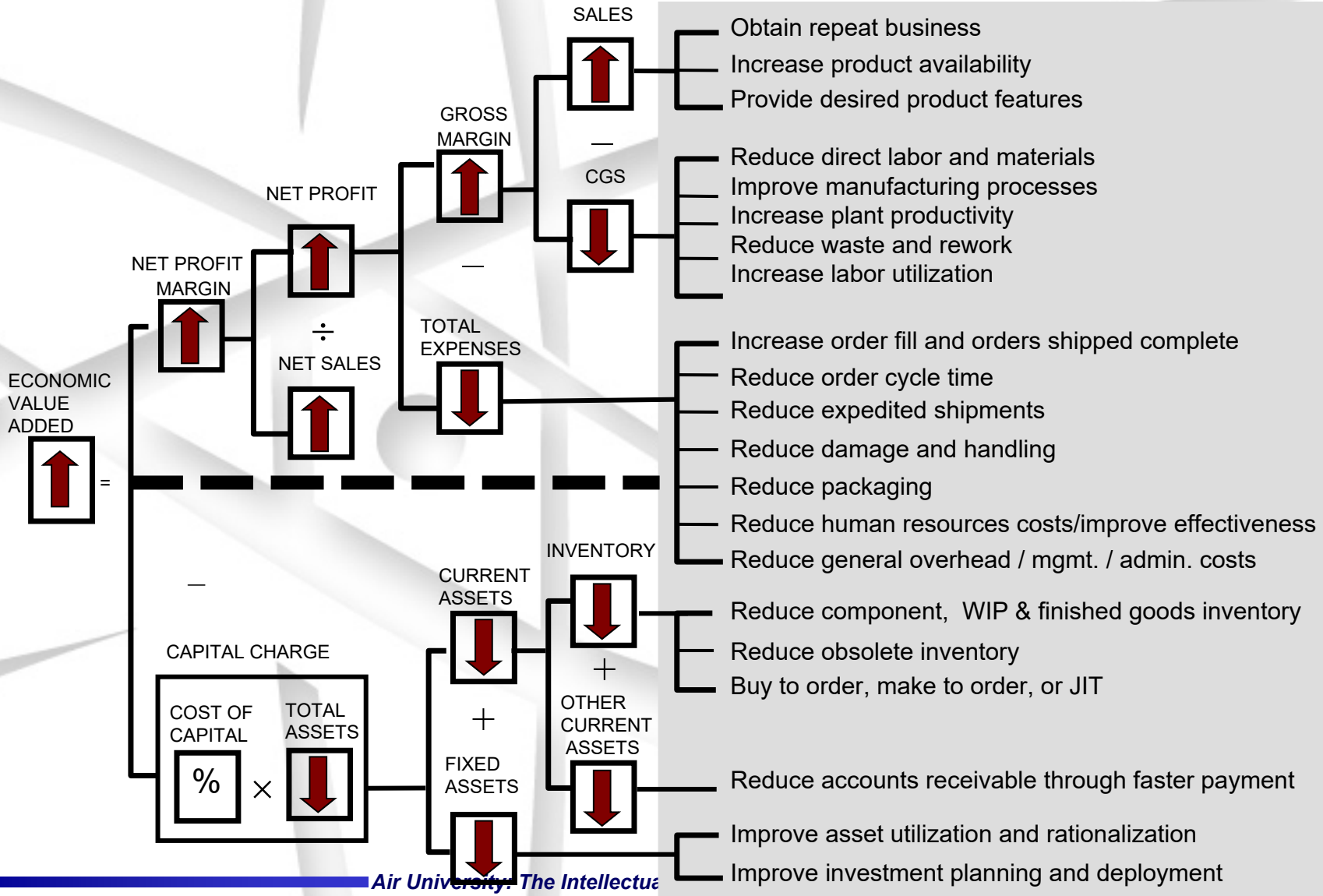
Agile Manufacturing

- Characteristics:
  - Flexible demand accommodation
    - Flexible manufacturing
    - Flexible workforce
    - Arbitrary lot sizing
  - Reconfigurable operating architecture
  - Integrated product design and manufacture
  - Short supply chains
  - Intense information sharing
  - Postponement
- Best applied to: Non-standardized or customized, high-margin products with volatile demand and short life cycles

Lean vs. Agile: Similarities and Differences

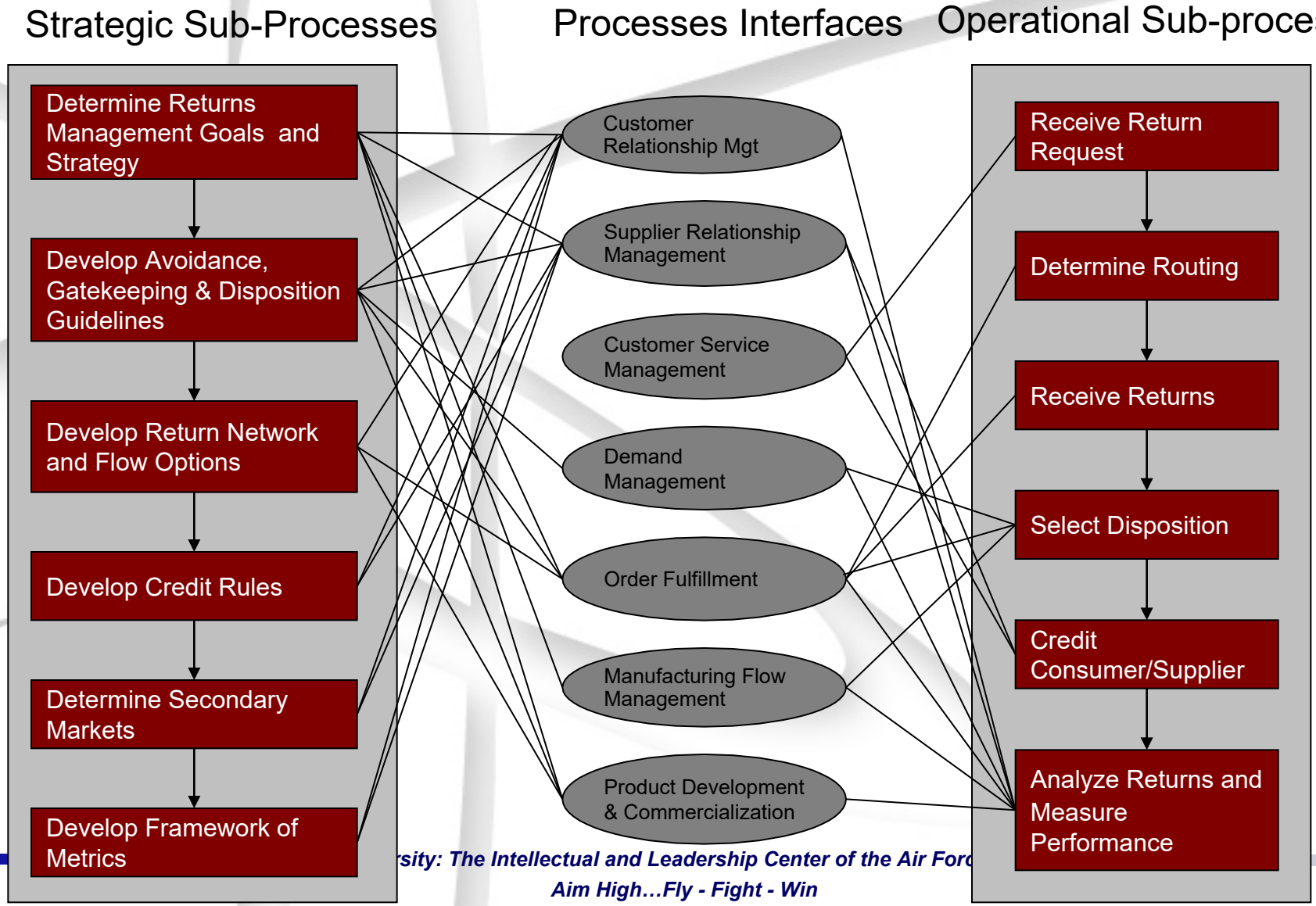
- Both approaches have the same objective: Meeting customer demands at the least total cost
  - Lean tends to focus on process – precise, efficient execution; internal perspective
  - Agile tends to focus on products – precise, effective accommodation; external perspective

How MFM Affects EVA ®

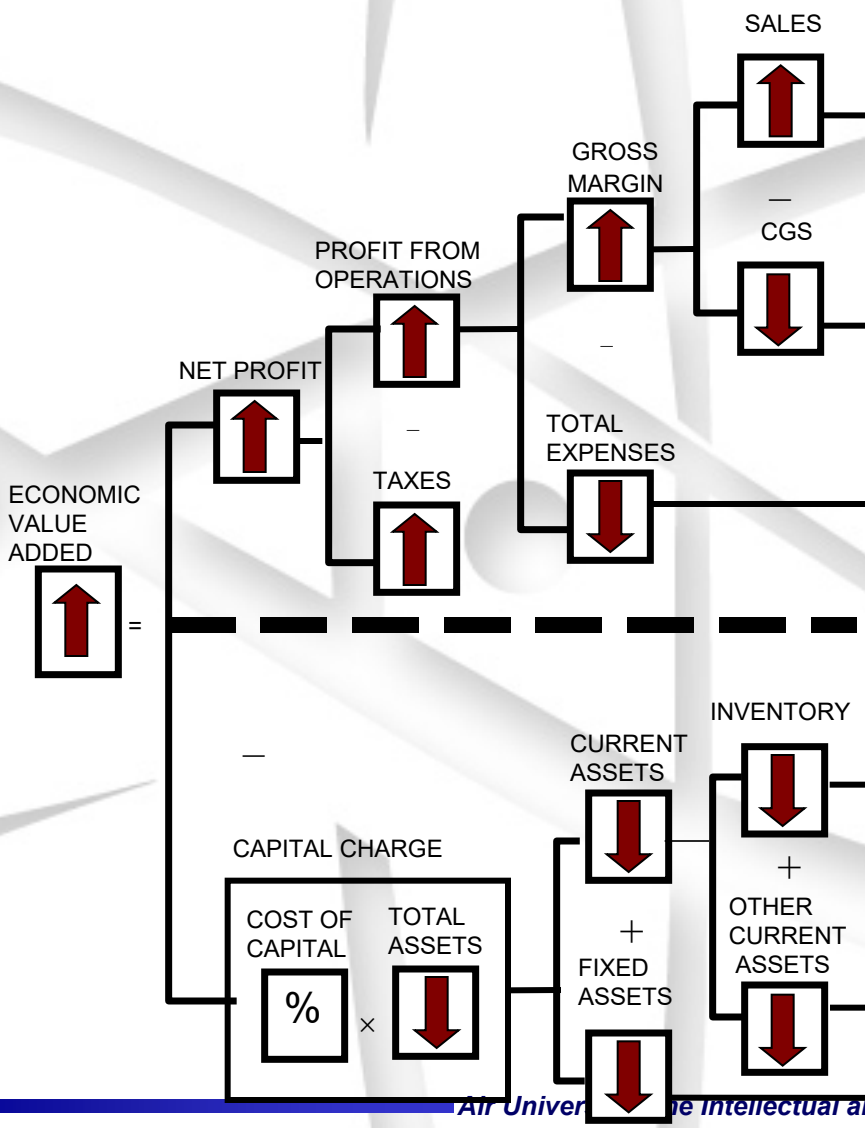


Returns Management

The AFIT of Today is the Air Force of Tomorrow.



How RM effects EVA®



- Obtain repeat business
- Increase sales volume
- Increase customer loyalty
- Resale of product in secondary channels
- Fewer markdowns, therefore higher sales price
- Asset Recovery
- Reduce direct materials through recycling
- Duty Drawback
- Remanufacture, Refurbish
- Reduce environmental or waste disposal costs
- Reduce customer service costs
- Reduce freight bill
- Reduce receiving, handling and storage
- Reduce documentation and credit processing
- Fewer returns because of improved quality
- Reduce obsolete inventory
- Reduce raw materials inventory through recycling
- Reduce Accounts Receivable
- Improve asset utilization and rationalization

Discussion / Questions

William A. Cunningham, Ph.D.