Supply Chain Strategy

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"All good strategy eventually degenerates into work."

Peter Drucker

Session outline

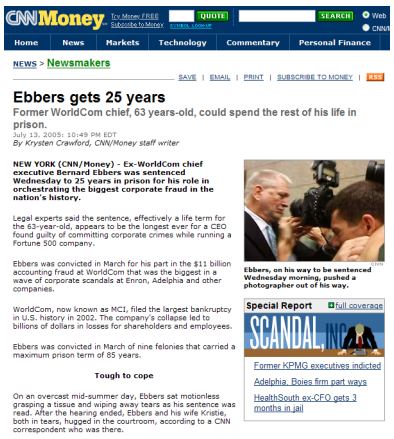
- Firm objectives
- Excellent supply chains
- Strategy alignment
- Supply chain strategy formation

FIRM OBJECTIVES

What were your goals in the simulation?

Two Goals of the CEO

- Provide Shareholder Value
- …and stay out of jail

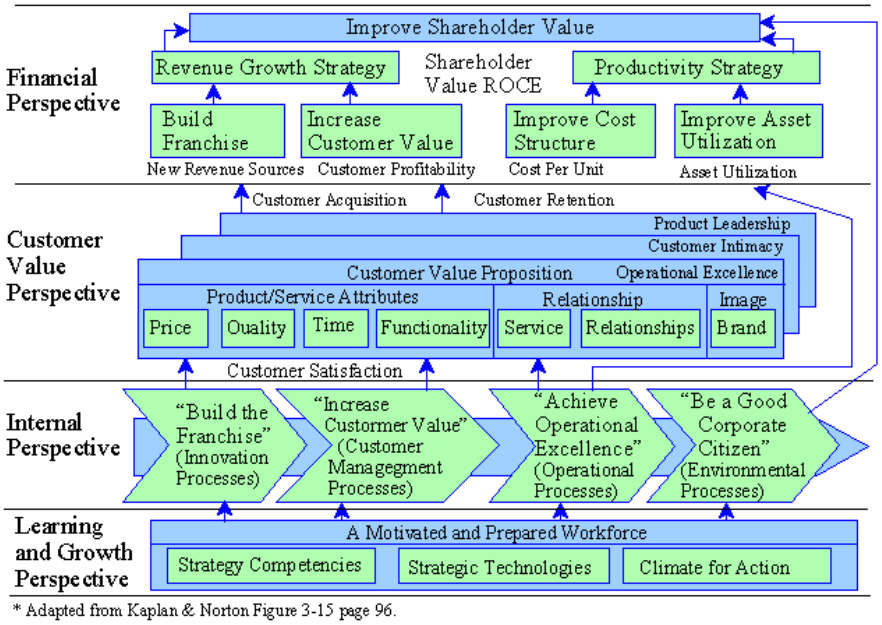


Goal of the CEO

- Provide Shareholder Value
- Drivers of Shareholder Value
  - Revenue Growth
  - Operating Margin
  - Asset Utilization

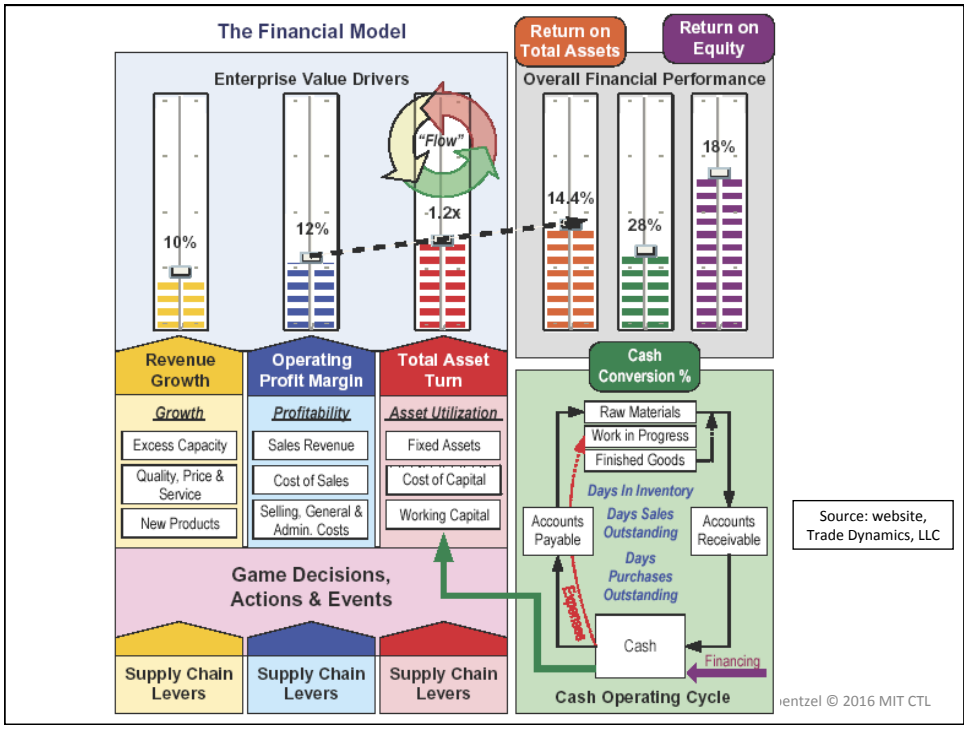
Supply chain professionals can affect all three!

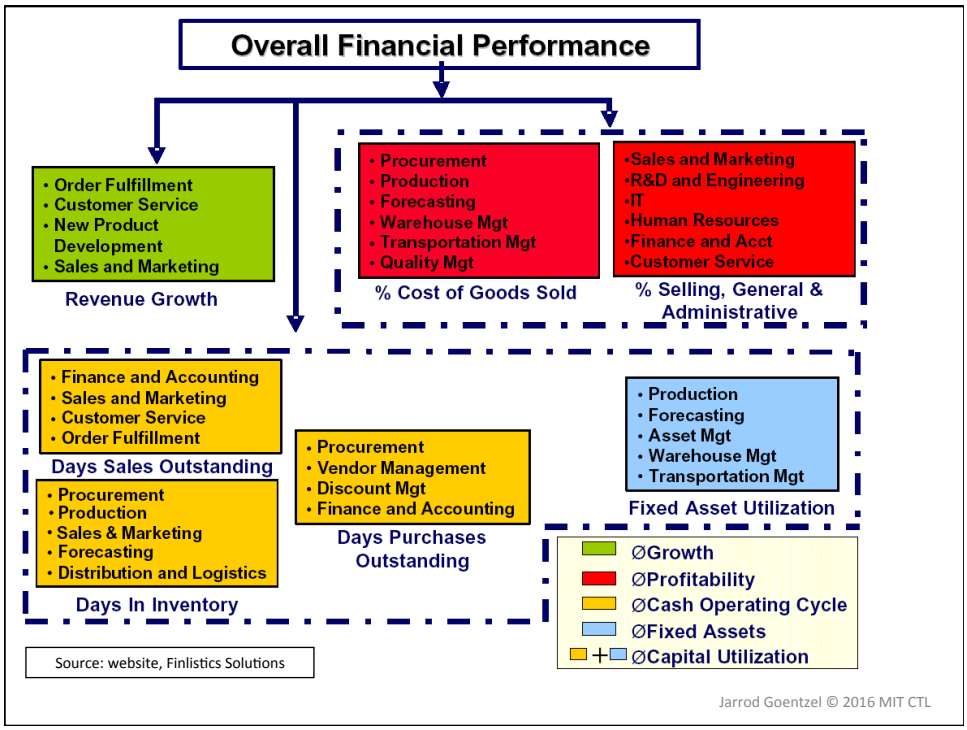
The Balanced Scorecard Generic Strategy Map*



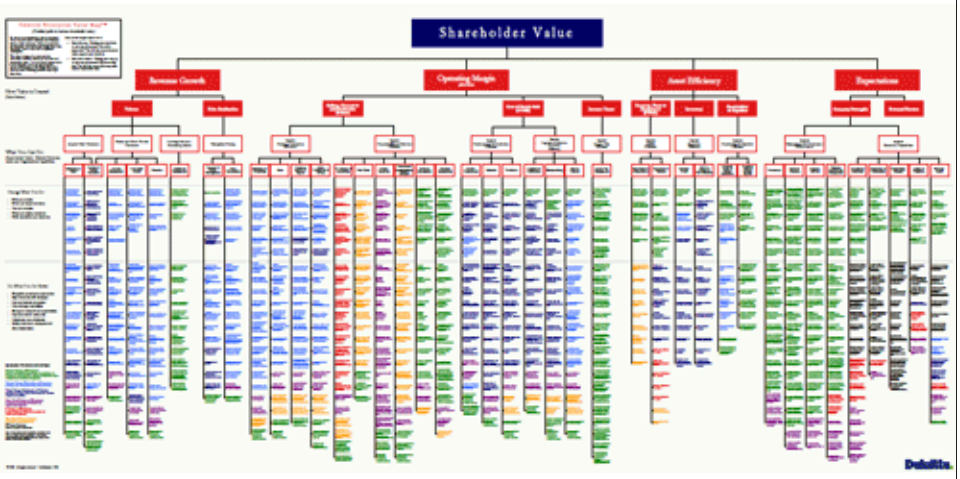
* Adapted from Kaplan & Norton Figure 3-15 page 96.

Source: http://www.maaw.info/ArticleSummaries/ArtSumKaplanNorton2001.htm

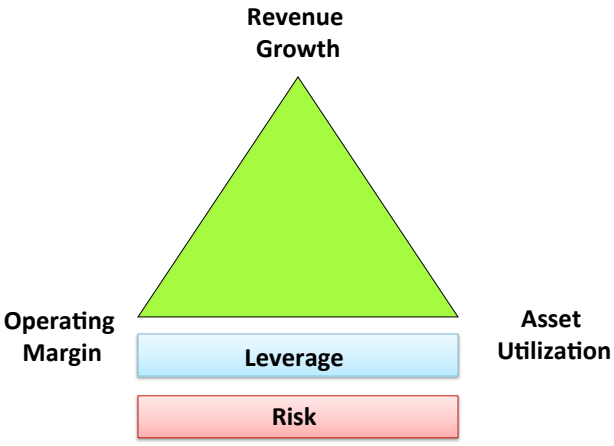

The Financial Model
Enterprise Value Drivers
Return on Total Assets
Return on Equity
Overall Financial Performance
"Flow"
10%
12%
1.2x
14.4%
28%
18%
Revenue Growth
Operating Profit Margin
Total Asset Turn
Growth
Profitability
Asset Utilization
Excess Capacity
Quality, Price & Service
New Products
Sales Revenue
Cost of Sales
Selling, General & Admin. Costs
Fixed Assets
Cost of Capital
Working Capital
Cash Conversion %
Raw Materials
Work in Progress
Finished Goods
Days In Inventory
Accounts Payable
Days Sales Outstanding
Accounts Receivable
Days Purchases Outstanding
Expenses
Cash
Financing
Cash Operating Cycle
Game Decisions, Actions & Events
Supply Chain Levers
Supply Chain Levers
Supply Chain Levers
Source: website, Trade Dynamics, LLC
© 2016 MIT CTL

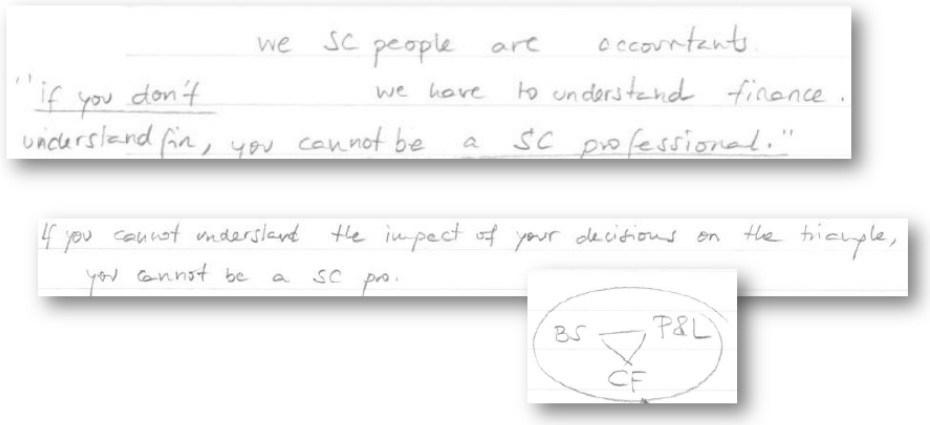

Overall Financial Performance
• Order Fulfillment
• Customer Service
• New Product Development
• Sales and Marketing
Revenue Growth
• Procurement
• Production
• Forecasting
• Warehouse Mgt
• Transportation Mgt
• Quality Mgt
% Cost of Goods Sold
•Sales and Marketing
•R&D and Engineering
•IT
•Human Resources
•Finance and Acct
•Customer Service
% Selling, General & Administrative
• Finance and Accounting
• Sales and Marketing
• Customer Service
• Order Fulfillment
Days Sales Outstanding
• Procurement
• Production
• Sales & Marketing
• Forecasting
• Distribution and Logistics
Days In Inventory
• Procurement
• Vendor Management
• Discount Mgt
• Finance and Accounting
Days Purchases Outstanding
• Production
• Forecasting
• Asset Mgt
• Warehouse Mgt
• Transportation Mgt
Fixed Asset Utilization
ØGrowth
ØProfitability
ØCash Operating Cycle
ØFixed Assets
ØCapital Utilization
Source: website, Finlistics Solutions
Jarrod Goentzel © 2016 MIT CTL

Deloitte Enterprise Value Map

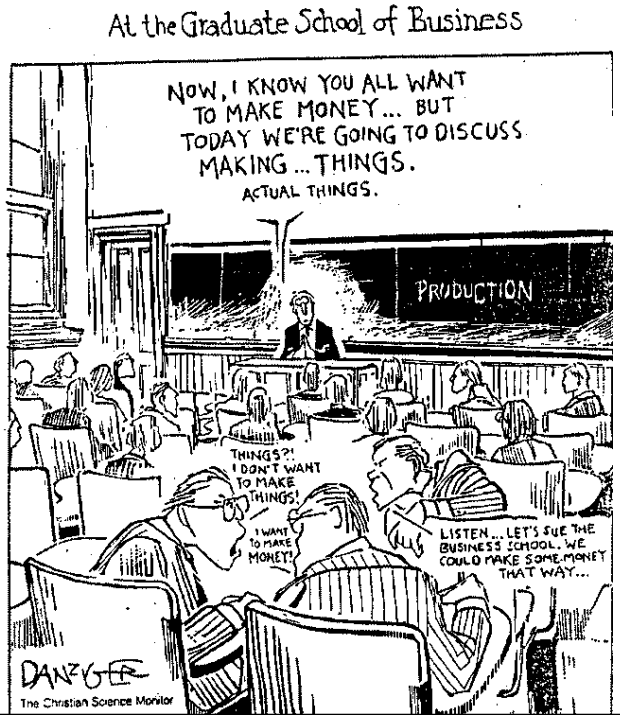


Drivers of Shareholder Value





Source: Roger Bloemen, Vice President for Supply Chain, Solutia, June 2009

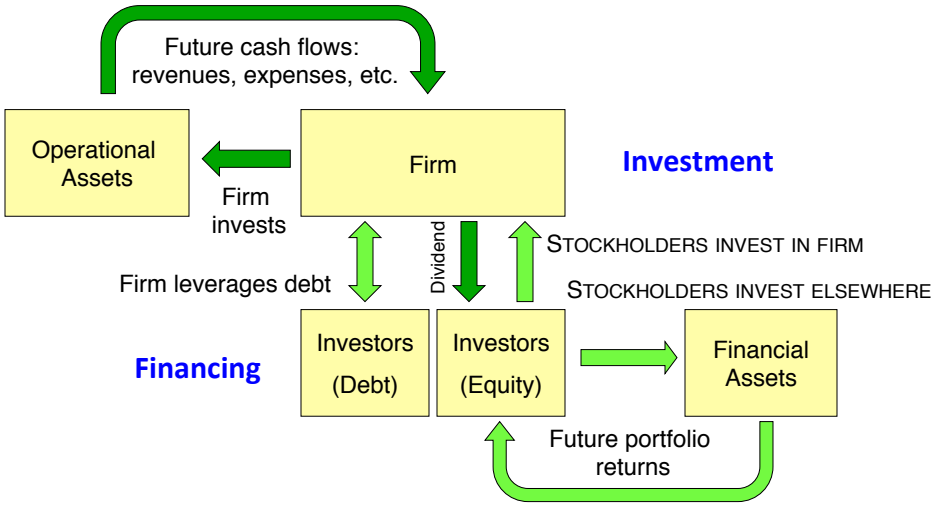


"A company's finances and operations are integrally connected."

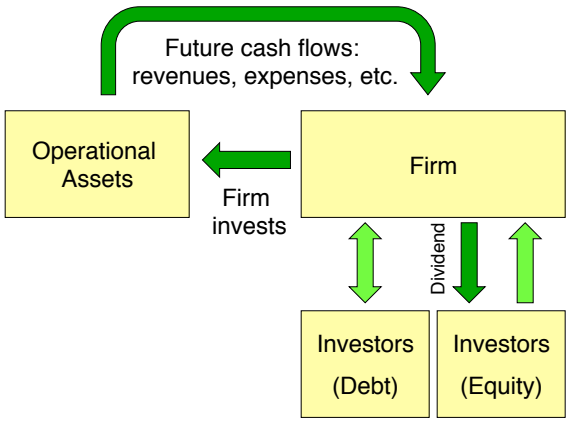
Popular Corporate Finance Textbook

Source: Higgins, R. Analysis for Financial Management. 10th ed. McGraw-Hill Irwin, 2011

Firm's value proposition



Finance and supply chain work together to create shareholder value

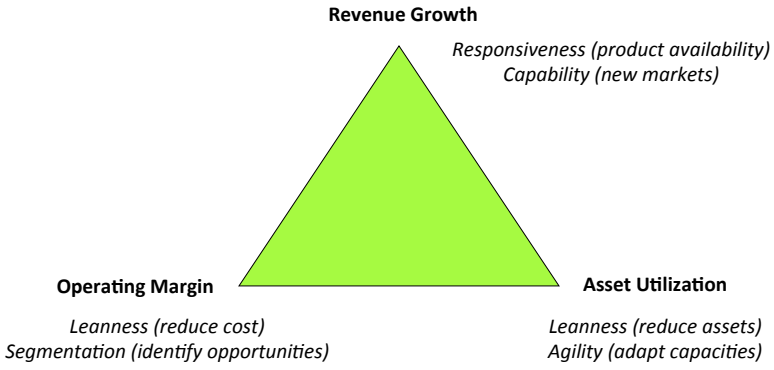


Operations / supply chain: use funds to generate returns

Finance: allocate funds

Finance: acquire funds

How does supply chain performance make an impact on shareholder value?



- Tradeoffs exist
- Which one do you focus on?

Dupont Analysis

Gross or Operating Margin is a more common metric for supply chain professionals than Net Margin

Inventory Turnover, a narrower focus than Asset Turnover, is often a metric for supply chain professionals

$$\text{Net margin} = \frac{\text{Net income}}{\text{Sales}}$$

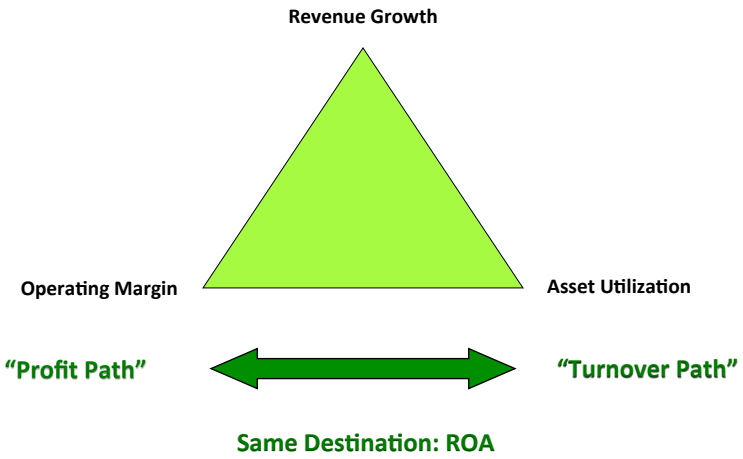
$$\text{Asset turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

$$\text{ROA} = \text{Net margin} \times \text{Asset turnover}$$

$$\text{Financial leverage} = \frac{\text{Total assets}}{\text{Equity}}$$

$$\text{ROE} = \text{Net margin} \times \text{Asset turnover} \times \text{Financial leverage}$$

Dupont Analysis assesses the Margin – Asset Utilization tradeoff at a high level



Do you see any extreme examples of Profit Path and Turnover Path?

	Return on Equity (ROE) (%)	=	Profit Margin (P) (%)	×	Asset Turnover (A) (times)	×	Financial Leverage (T) (times)
Adobe Systems	14.9	=	20.4	×	0.47	×	1.57
Chevron	18.1	=	10.0	×	1.03	×	1.76
Google	18.4	=	29.0	×	0.51	×	1.25
Hewlett-Packard	21.7	=	7.0	×	1.01	×	3.08
JPMorgan Chase	10.3	=	15.0	×	0.054	×	12.58
Norfolk Southern	14.0	=	15.7	×	0.34	×	2.64
Novartis	15.5	=	19.3	×	0.41	×	1.95
Safeway	11.8	=	1.42	×	2.71	×	3.03
Sensient Technoligies	10.9	=	8.1	×	0.83	×	1.63
Southern Company	12.6	=	11.7	×	0.32	×	3.40

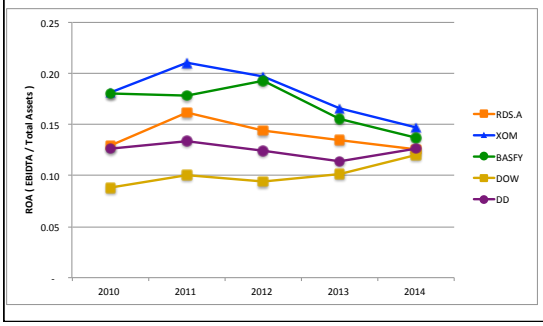
Source: Higgins, R. Analysis for Financial Management. 10th ed. McGraw-Hill Irwin, 2011.

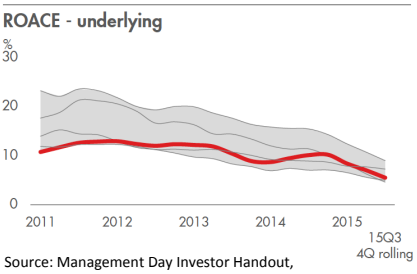
Chemical Industry Financial Analysis

Five Year Average (2010-2014)

	RDS.A	XOM	BASFY	DOW	DD
Revenue Growth	4.3%	2.5%	2.0%	2.2%	2.6%
Operating Margin	11.1%	15.3%	14.7%	12.2%	17.0%
Asset Turnover	1.25	1.17	1.15	0.82	0.74
ROA	13.9%	18.0%	16.9%	10.1%	12.5%

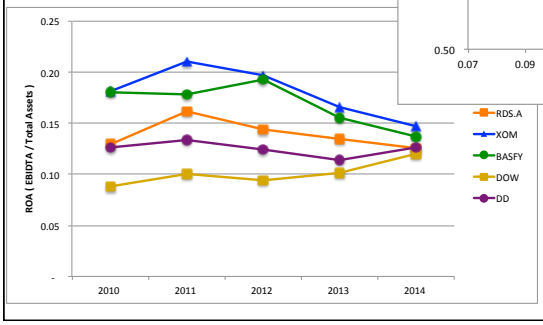
Data source: Compustat - Capital IQ; Analysis: Jarrod Goentzel

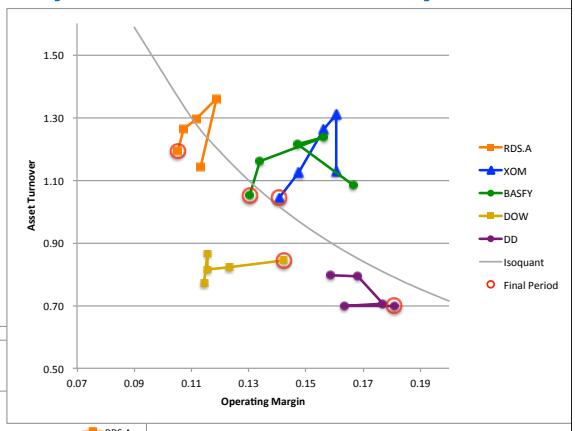




Source: Management Day Investor Handout, Royal Dutch Shell, 3-4 November 2015.

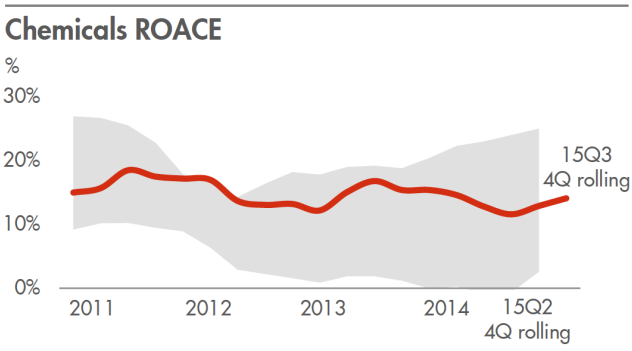
Chemical Industry Financial Analysis





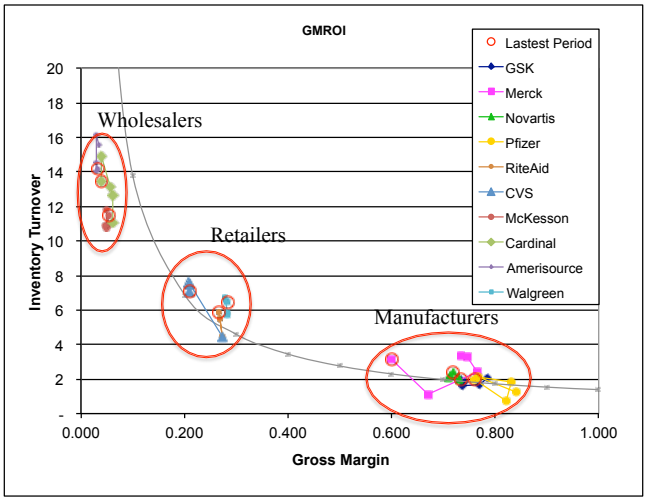
Data source: Compustat - Capital IQ; Analysis: Jarrod Goentzel

ROA for Shell Chemicals



Source: Management Day Investor Handout, Royal Dutch Shell, 3-4 November 2015.

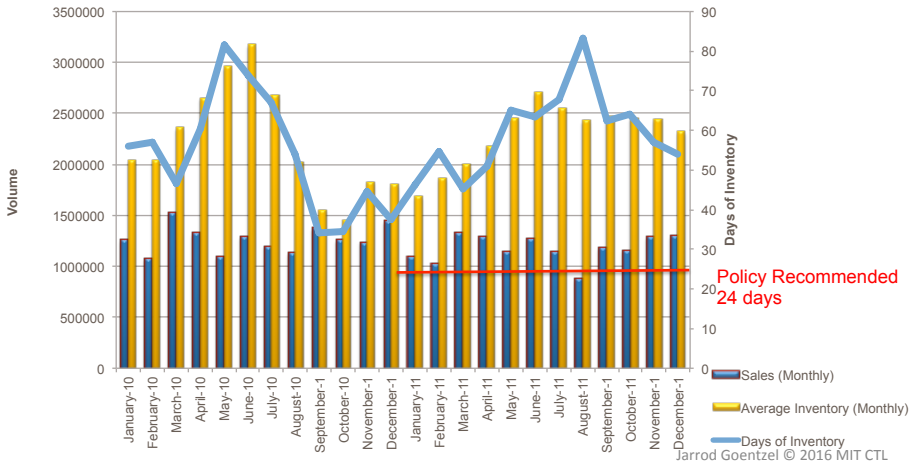
Financial Analysis for Pharmaceuticals, Wholesalers and Retailers (Annual Reports 2007-2011)



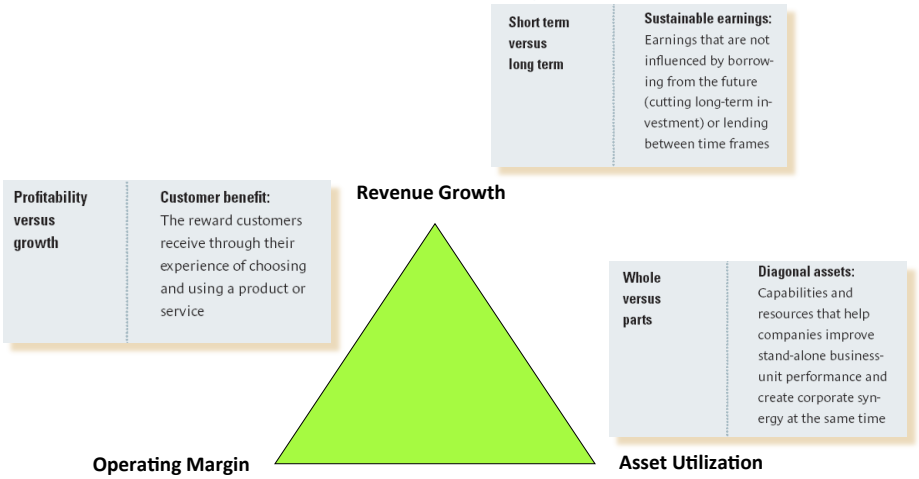
- Pharma margins are dropping and they need to increase inventory turns, i.e. reduce inventory.
- Wholesalers do not have the margin to take on additional inventory.

PharmaCo Inventory Example

- High variability in inventory position for stable sales
- Average inventory higher than inventory policy recommendation

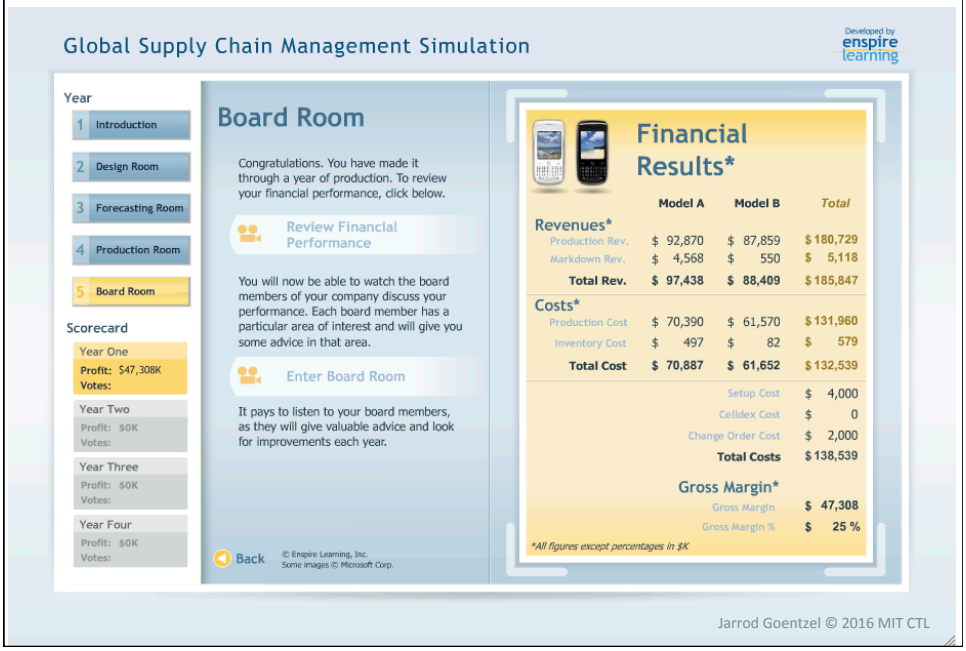


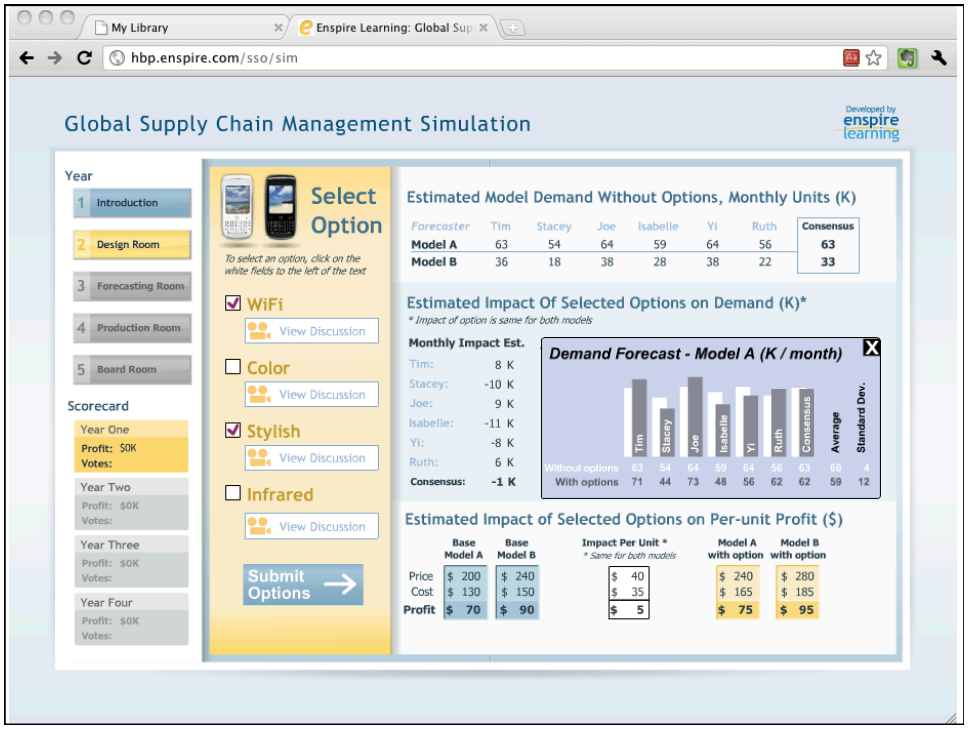
Common Bond to Manage the Tradeoff



Source: Dominic Dodd and Ken Favaro. "Managing the Right Tension," *Harvard Business Review*, Vol. 84/12, December 2006, pp. 62-74.

What were your goals in the simulation?





Total Margin

YEAR 1 OPTIONS

	Model B WAP	Color	Stylish	Infrared
Price without option	$ 240	$ 240	$ 240	$ 240
Cost without option	$ 150	$ 150	$ 150	$ 150
Unit Margin without option	$ 90	$ 90	$ 90	$ 90
Price with option	$ 270	$ 255	$ 250	$ 243
Cost with option	$ 180	$ 165	$ 155	$ 152
Unit Margin with option	$ 90	$ 90	$ 95	$ 90
Unit Margin difference with option	$ -	$ -	$ 5	$ -

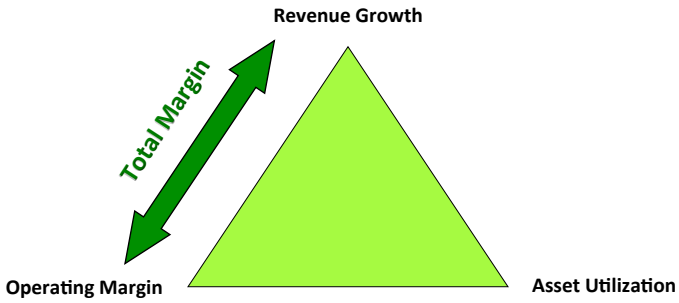
CONSENSUS

Forecast without option	33	33	33	33
Forecast with option	34	34	31	33
difference with option	1	1	-2	0
Total Margin without option	$ 2,970	$ 2,970	$ 2,970	$ 2,970
Total Margin with option	$ 3,060	$ 3,060	$ 2,945	$ 2,970
difference with option	$ 90	$ 90	$ (25)	$ -

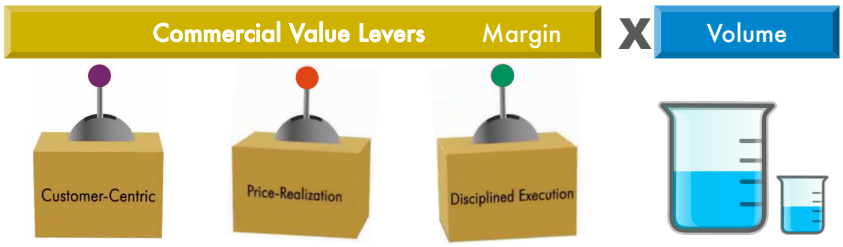
MEAN

Forecast without option	30	30	30	30
Forecast with option	30	26	29	29
difference with option	0	-4	-1	-1
Total Margin without option	$ 2,700	$ 2,700	$ 2,700	$ 2,700
Total Margin with option	$ 2,700	$ 2,340	$ 2,755	$ 2,610
difference with option	$ -	$ (360)	$ 55	$ (90)

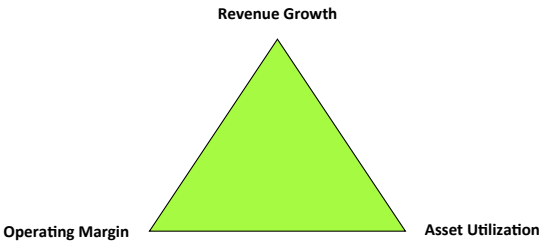
Total Margin considers the Operating Margin – Asset Utilization tradeoff



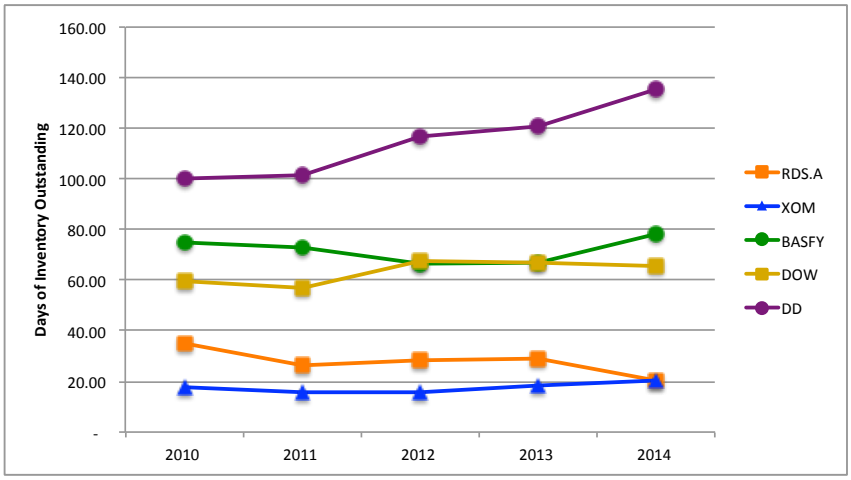
How does this commercial strategy approach fit with the value triangle?



Source: Ethylene Oxide/Glycols COMMERCIAL STRATEGY REFRESH 2016-2018, June 2015



Asset Utilization – supply chain



Asset Utilization – commercial

T&R Chemicals 2016 - credit metrics

	DSO							
	Target 2015				**Target 2016**			
Product line	EUAF	AMER	APME	GLOBAL	EUAF	AMER	APME	GLOBAL
EOG	35.0	37.8	64.4	49.7	34.6	37.1	64.2	49.5

	Overdue %							
	Target 2015				**Target 2016**			
Product line	EUAF	AMER	APME	GLOBAL	EUAF	AMER	APME	GLOBAL
EOG	3.0%	2.5%	0.5%	1.1%	2.7%	2.3%	0.5%	1.2%

Source: Ethylene Oxide/Glycols COMMERCIAL STRATEGY REFRESH 2016-2018, June 2015

Asset Utilization – property, plant and equipment (PP&E)

DOWNSTREAM

KEY STATISTICS			$ MILLION
	2014	2013	2012
Segment earnings [A]	3,411	3,869	5,382
Including:			
Revenue (including inter-segment sales)	378,046	404,427	424,410
Share of earnings of joint ventures and associates [A]	1,698	1,525	1,354
Production and manufacturing expenses	9,845	9,807	9,539
Selling, distribution and administrative expenses	12,489	13,114	12,860
Depreciation, depletion and amortisation	6,619	4,421	3,083
Net capital investment [B]	3,079	4,885	4,275
Refinery availability (%) [C]	94	92	93
Chemical plant availability (%) [C]	85	92	91
Refinery processing intake (thousand b/d)	2,903	2,915	2,819
Oil products sales volumes (thousand b/d)	6,365	6,164	6,235
Chemicals sales volumes (thousand tonnes)	17,008	17,386	18,669

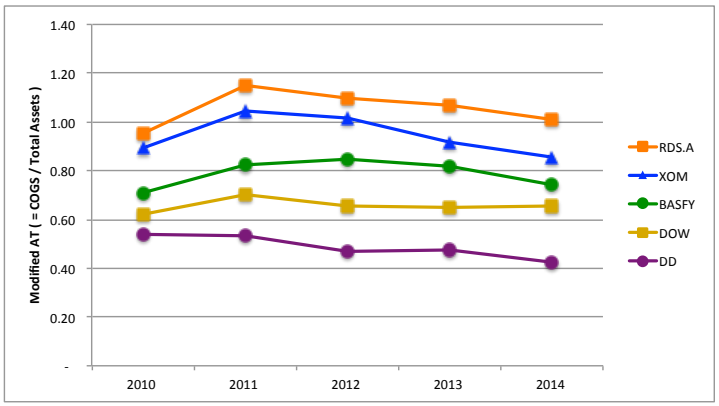
[A] See Notes 2 and 4 to the "Consolidated Financial Statements". Segment earnings are presented on a current cost of supplies basis.
[B] See "Non-GAAP measures reconciliation".
[C] The basis of calculation differs from that used for the "Refinery and chemical plant availability" measure in "Performance indicators", which excludes downtime due to uncontrollable factors.

Source: Shell Annual Report 2014.

Chemical Industry Financial Analysis

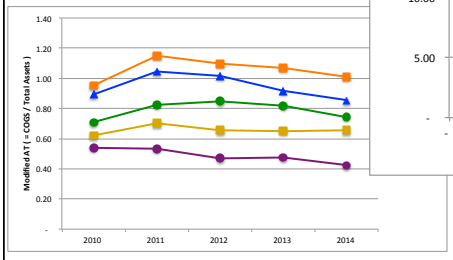
Five Year Average (2010-2014)

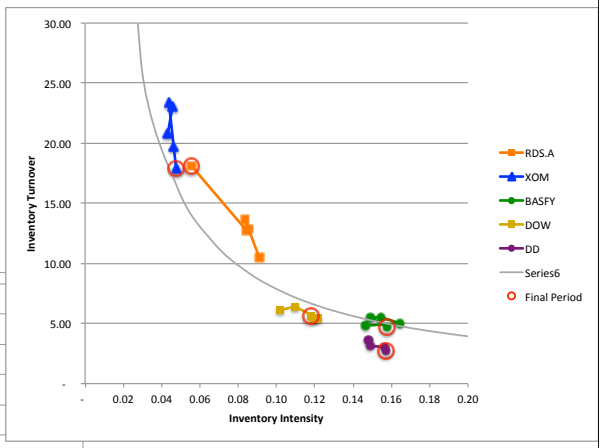
	RDS.A	XOM	BASFY	DOW	DD
Modified AT (=COGS/Total Assets)	1.06	0.95	0.79	0.66	0.49
IT (=COGS/Inv)	13.58	20.97	5.11	5.79	3.22
InvInt (=Inv/Total Assets)	0.08	0.05	0.15	0.11	0.15



Data source: Compustat - Capital IQ; Analysis: Jarrod Goentzel

Chemical Industry Financial Analysis





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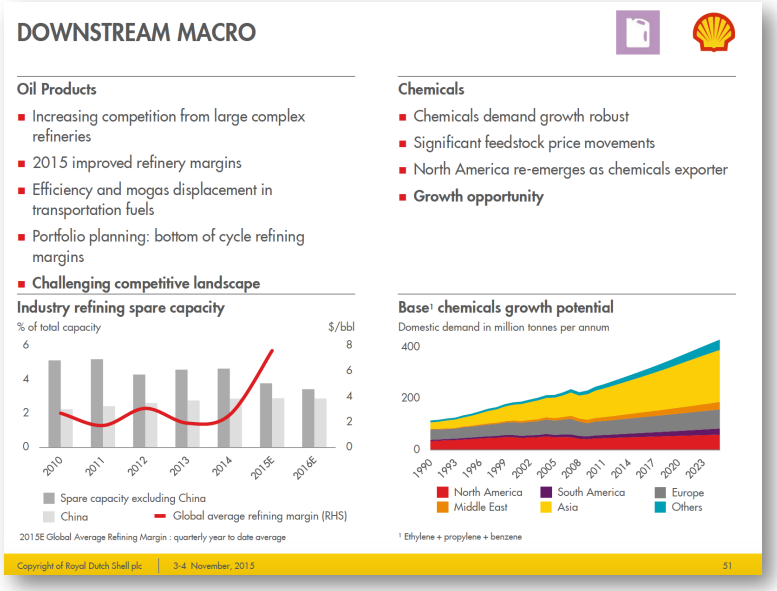
Revenue Growth



DOWNSTREAM MACRO

Oil Products

- Increasing competition from large complex refineries
- 2015 improved refinery margins
- Efficiency and mogas displacement in transportation fuels
- Portfolio planning: bottom of cycle refining margins
- **Challenging competitive landscape**

Chemicals

- Chemicals demand growth robust
- Significant feedstock price movements
- North America re-emerges as chemicals exporter
- **Growth opportunity**

Industry refining spare capacity

% of total capacity / $/bbl

6 4 2 0 — 8 6 4 2 0

2010 2011 2012 2013 2014 2015E 2016E

Spare capacity excluding China
China
Global average refining margin (RHS)

2015E Global Average Refining Margin : quarterly year to date average

Base[1] chemicals growth potential

Domestic demand in million tonnes per annum

400 200 0

1990 1993 1996 1999 2002 2005 2008 2011 2014 2017 2020 2023

North America
South America
Europe
Middle East
Asia
Others

[1] Ethylene + propylene + benzene

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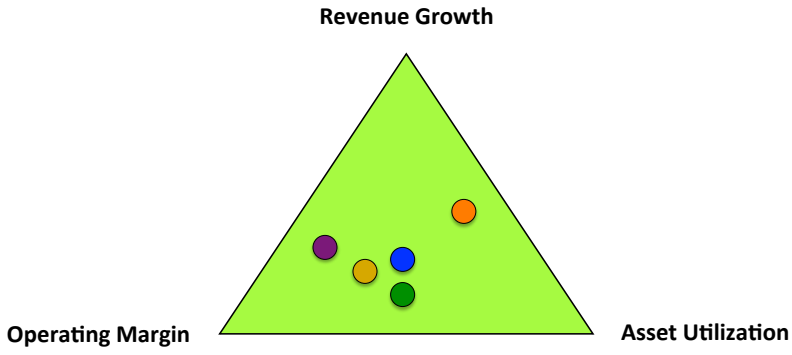
Source: Management Day Investor Handout, Royal Dutch Shell, 3-4 November 2015.

How would you position RDS and its competitors?



Five Year Average (2010-2014)

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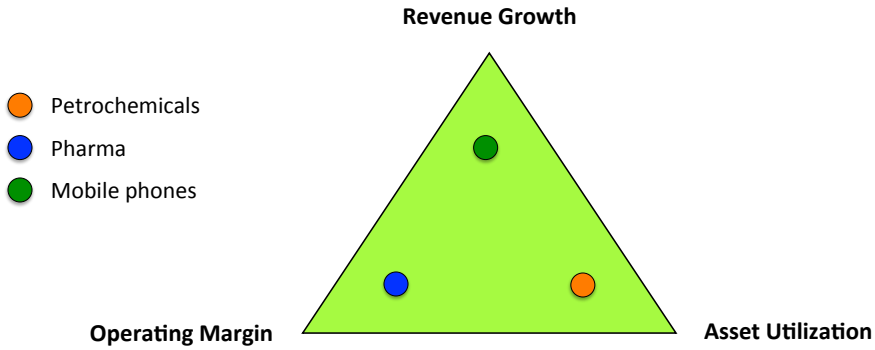
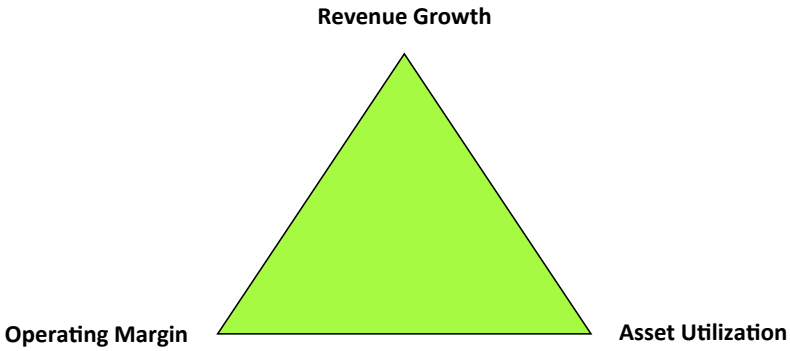
Revenue Growth	4.3%	2.5%	2.0%	2.2%	2.6%
Operating Margin	11.1%	15.3%	14.7%	12.2%	17.0%
Asset Turnover	1.25	1.17	1.15	0.82	0.74
ROA	13.9%	18.0%	16.9%	10.1%	12.5%

How would you position petrochemicals, pharma, and mobile phones?



How would you position the business units for Shell Chemicals?



Discuss in a group of 3-4 people.

EXCELLENT SUPPLY CHAINS

MIT Research on Excellent Supply Chains

- Defined myths regarding an excellent supply chain
  - It is part of a profitable company
  - It is not part of an unprofitable company
  - It is comprised of supply chain "best practices"
- Conducted qualitative research
  - Explored drivers, challenges, and supply chain responses for nine industries
  - Profiled supply chains of 21 case-study companies
  - Identified important linkages that exist among competitive strategies, operating models, operational performance objectives, and business practices.

Source: Larry Lapide. "The Essence of Excellence," *Supply Chain Management Review*, April 2006, pp. 18-24.

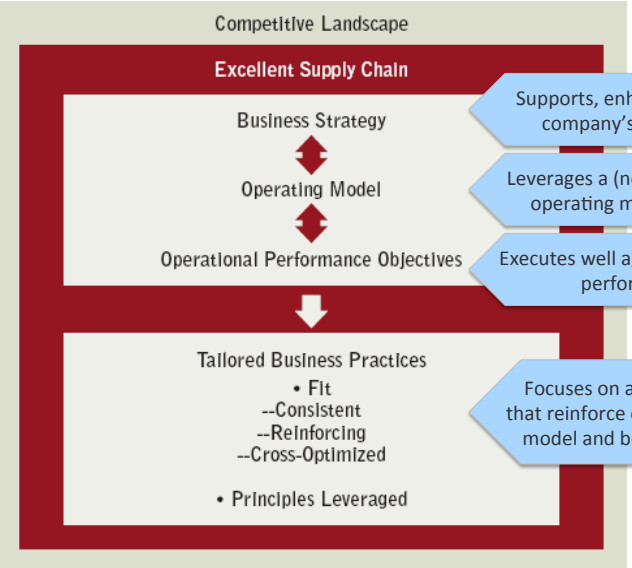
MIT Research on Excellent Supply Chains

Research confirmed that an excellent supply chain:

1. Supports, enhances, and is an integral part of a company's competitive business strategy.
2. Leverages a (not necessarily unique) supply chain operating model to sustain competitiveness
3. Executes well against a balanced set of operational performance objectives/metrics
4. Focuses on a few "tailored" business practices that reinforce each other to support the operating model and best achieve operational objectives.

Source: Larry Lapide. "The Essence of Excellence," *Supply Chain Management Review*, April 2006, pp. 18-24.

Excellent Supply Chain Framework



Source: Larry Lapide. "The Essence of Excellence," *Supply Chain Management Review*, April 2006, pp. 18-24.

1. Supports, enhances, and is an integral part of a company's competitive business strategy

Lowest prices
Highest margin products
Highest quality
Fastest customer response
Most innovative
Highest Return-on-Assets
Broadest product line
Best customer service
Best post-sales support
Most environmentally responsible

Some competitive strategies linked to supply chain

Supply chain may not be integral with the entire business strategy, but should be part…otherwise, you have your work cut out for you

Adapted from Larry Lapide

2. Leverages a supply chain operating model to sustain competitiveness

Competitive Strategy	Operating Model
Lowest prices	• Lowest operating costs
Highest margin products	• Maximum availability at point of sale
Highest quality	• Highest quality of suppliers • Strongest manufacturing quality controls
Fastest customer response	• Shortest order-to-delivery cycle • Fastest request-to-promise date
Most innovative	• Most efficient new product launch
Highest Return-on-Assets	• Highest plant utilization • Lowest inventories
Broadest product line	• Adept at managing complexity
Best customer service	• Specific service for each customer segment • Maximum availability at point of sale
Best post-sales support	• Maximum availability of service parts
Most environmentally responsible	• Minimize waste and maximize recycling

2. Leverages a supply chain operating model to sustain competitiveness

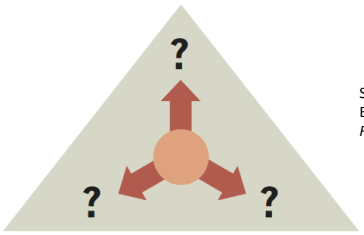
Company	Operating Model
Dell Inc.	Consumer Direct/ MTO
Zara	Speed to Market
Intel	Copy Exact
Nike, Cisco	Virtual Integration/Network Master
Agrenco	Coordinating Many-to-many Customer/Supplier Network
Nokia	Early Detection Systems, Multi-point Relationship etc
Whirlpool	Direct Fulfillment
Caterpillar	Shared Operations
Walmart	Flow Distribution

Adapted from Larry Lapide

3. Executes well against a balanced set of operational performance objectives

Customer Response (Customer-Facing)
- Order Cycle Times
- Perfect Order Fulfillment
- Quality
- New Product Time-to-Market

(Not on Financial Statements)



Source: Larry Lapide. "The Essence of Excellence," *Supply Chain Management Review*, April 2006, pp. 18-24.

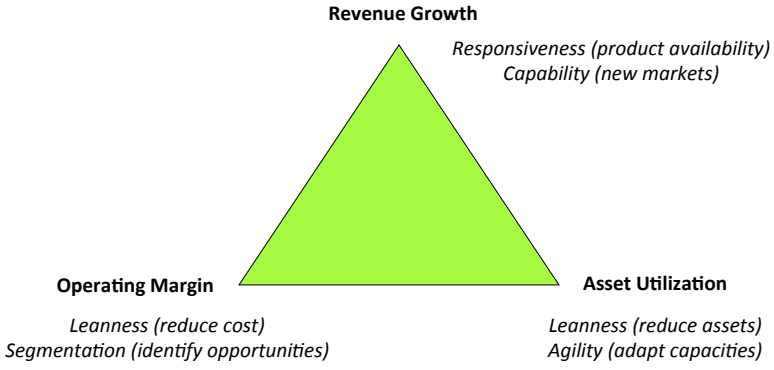
Efficiency (Internal)
- Labor Productivity
- Supply Chain Costs

(Relate to Income Statements)

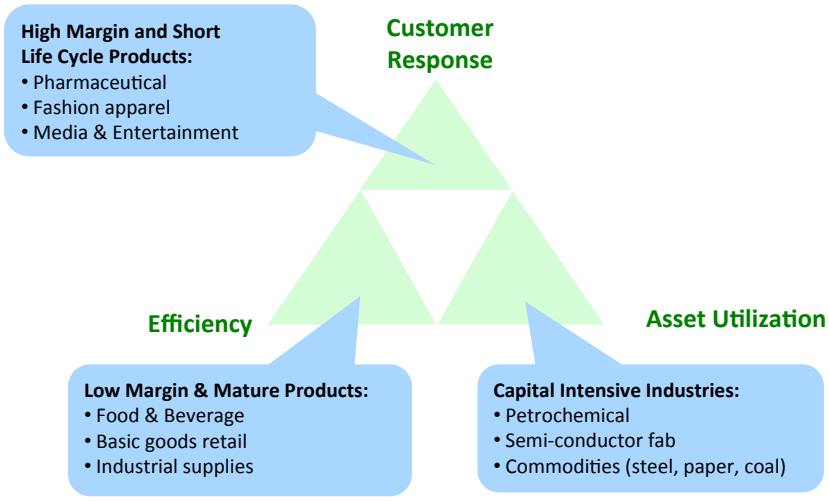
Asset Utilization (Internal)
- Facility Utilization
- Inventory Turns
- Cash-to-Cash Cycle

(Relate to Balance Sheet)

How supply chain performance makes an impact on shareholder value

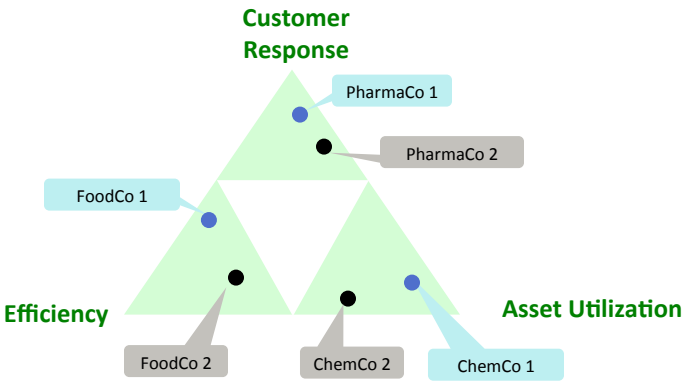


Balanced operational objectives vary by industry in absolute terms



Adapted from Larry Lapide

Balanced operational objectives vary within industry in relative terms



Operational objectives may further vary within a company by business unit

Adapted from Larry Lapide

4. Focuses on a few "tailored" business practices that reinforce each other to support the operating model and best achieve operational objectives

- Tailored (not best) business practices
- Align to performance objectives
  - Fit
  - Consistent (make sense together)
  - Reinforcing (support each other)
  - Cross-optimized (work together to achieve common goals)
- Leverage fundamental operating principles / theory

STRATEGY ALIGNMENT

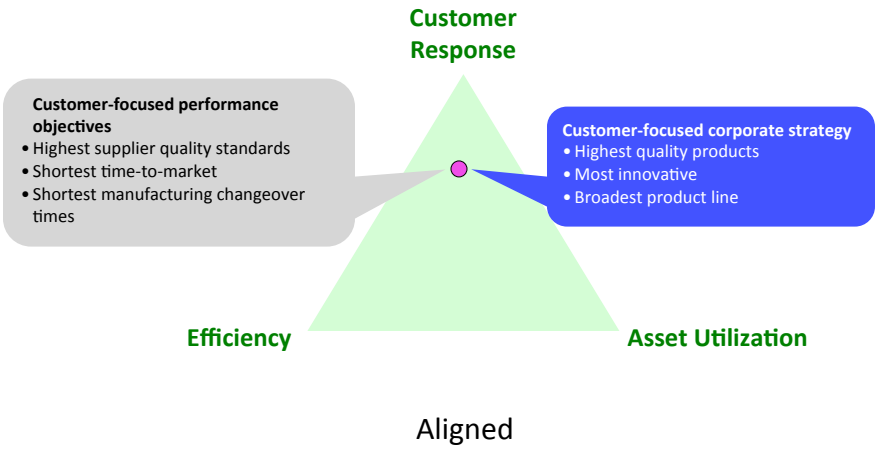
Case Studies of Successful Supply Chains

Source: Larry Lapide. "The Essence of Excellence," *Supply Chain Management Review*, April 2006, pp. 18-24.

Company/ Industry	Strategy	Operating Model	Ranked Performance Objectives *	Set of Tailored Practices
Dell/High Tech (Computers)	Highest value-to-price provider of computers and accessories to price-conscious customers.	Direct sales to customers via Web/phone. Build-to-order manufacturing. Box-level service.	1. Efficiency (e.g., costs) 2. Asset utilization 3. Customer response	Consigned inventory supplier hubs. Demand shaping. Inbound transportation collaboration.
IBM/ High Tech (Computers)	Diversified and value-added provider of networked technology solutions to businesses.	Direct, single face to customer via sales reps. Build-to-order manufacturing. Extensive pre- and post-sales support.	1. Customer Response (e.g., satisfaction and sales rep efficiency) 2. Efficiency 3. Asset Utilization	Consolidated customer fulfillment process. Launch "buffer" manufacturing. Centralized procurement. Consolidated and outsourced logistics.
Cisco Systems/ High Tech (Communications Equipment)	Market world-class IT solutions. Be industry leader in the data-networking market. Become end-to-end solution provider.	Outsourced supply chain leveraging partners. World-class new-product-introduction process. Facilitate rapid integration of technology-rich acquisitions.	1. Efficiency (Costs) 2. Customer response 3. Asset utilization	Virtual supply chain. Partner visibility into end-to-end processes. Early design engagement. Operating standards to support rapid assimilation of acquired companies.
Wal-Mart/Retail	Everyday low pricing for cost-conscious customers.	Lowest-cost, brick-and-mortar retailer with supplier/retailer DC-to-store flows. Large-format stores carrying a wide variety of products (not necessarily brands and SKUs).	1. Efficiency (e.g., supply chain costs) 2. Asset utilization 3. Customer response	Vendor collaboration with co-managed inventory programs. Flow logistics distribution including cross-docking, direct-store-delivery, and differentiated flow. Network design incorporating large-sized DCs and short-haul private fleets for economies of scale.
Amazon/Retail	Be the largest one-stop shopping site on the Internet. Offer customers low prices, convenience, and a wide selection of merchandise.	Internet retail with unit-level picking, packing, and parcel fulfillment. Multi-tier network of inventories for distributed fulfillment from partners to offer scale and scope.	1.Customer response (e.g., availability) 2. Efficiency 3. Asset utilization	Drop-ship fulfillment from multi-tier partner network. Advanced batched-order warehouse picking, packing, and shipping strategies. Customer lead-time service-window management.
Limited Brands/ Fashion Apparel Retail	Sell innovative, technologically advanced, high-margin fashion products. Reduce risk by balancing basics vs. fashion mix.	Control supply chain operations from plants to DCs to owned stores. High shelf availability at store level.	1.Customer response (e.g., responsiveness) 2.Asset utilization / efficiency	Segmented fashion vs. basic supply chains. Captive global sourcing company. Captive, shared-services logistics provider--from plants to stores.

*Note: Performance objectives ranked by the competitive focus placed on each type, with examples for the highest focus.

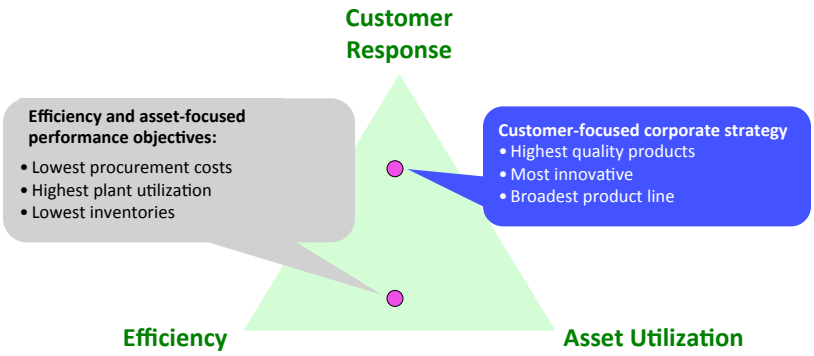
Aligning Corporate Strategy and Operational Performance Objectives



Aligned

Adapted from Larry Lapide

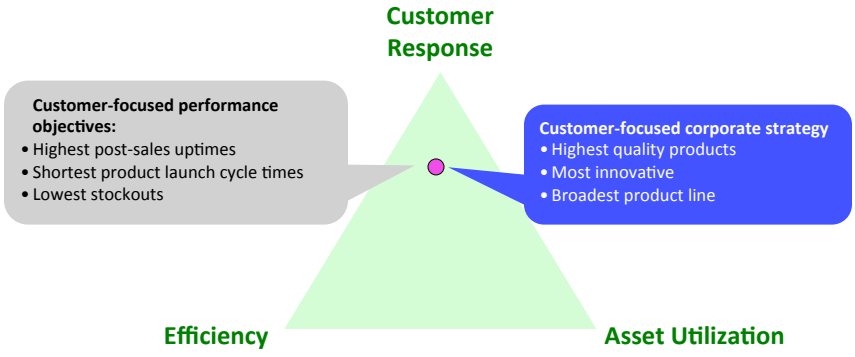
Aligning Corporate Strategy and Operational Performance Objectives



Non-aligned

Adapted from Larry Lapide

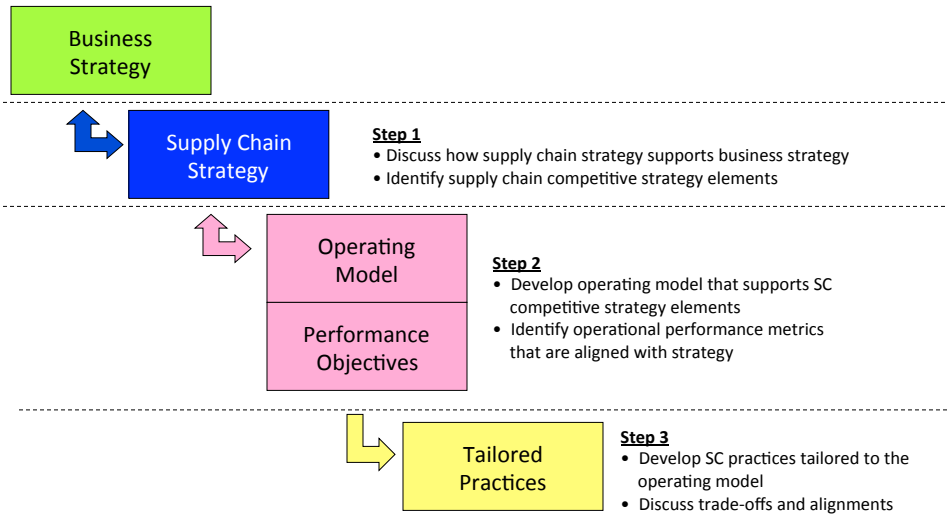
Aligning Corporate Strategy and Operational Performance Objectives



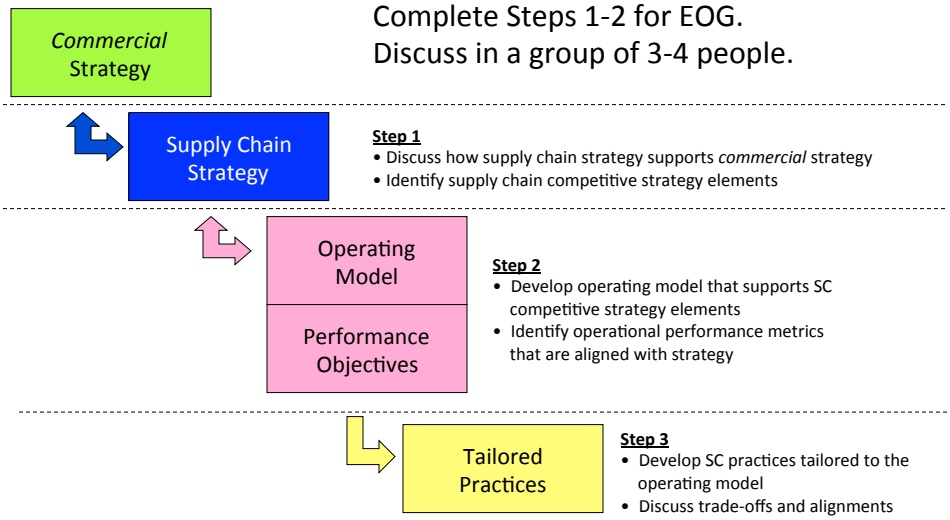
Aligned differently

Adapted from Larry Lapide

Strategy Alignment Process



Strategy Alignment for Ethylene Oxide/Glycols



SUPPLY CHAIN STRATEGY FORMATION

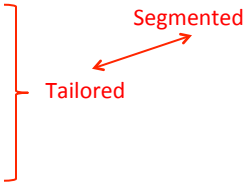
Supply Chain Strategy Audit

1. What levels of service (a) do our customers expect? (b) do our competitors provide?
2. How do competitors achieve the service levels that we think they achieve?
3. Through how many outlets should we distribute our products? Of what type? Where?
4. Are our plants located and focused properly to support corporate strategy?
5. Where is our company on the logistics life cycle for all or a portion of its business?
6. Have we taken advantage of the full potential for postponement and speculation, standardization, consolidation, and differentiation in our logistics programs?
7. To what extent have we assured ourselves that our strategy meets desired levels of costs and services where it counts most, to the end-user?
8. To what extent have we employed "channel vision" in determining who should do what, when, where, and how in our channels of distribution? Have we taken steps to ensure that all parties carry out their functions as planned?
9. What implications do technological trends have for our company?
10. What implications do regulatory trends have for us?
11. Does our logistics strategy support our corporate strategy? To what extent should our strategy be logistics-oriented?

Source: Heskett, J. L. (1977). "Logistics--essential to strategy." *Harvard Business Review* 55(6): 85-96.

Setting Supply Chain Strategy

1. Corporate strategy alignment: financial structure/objectives, product life cycle, market segments
2. Competitor strategy
3. Service to end-users / service to customers (bundle of products AND related services)
4. Channels of distribution: functional allocation, coordination,…
5. Geography of distribution: retail, warehouse locations ,…
6. Sourcing strategy: plant locations, supplier selection,…
7. Inventory policies & processes
8. Transportation policies & processes
9. Innovative practices
10. Trends: technological, regulatory, market
11. Organizational capability, culture, and communication



Adapted from:
Heskett, J. L. (1977). "Logistics--essential to strategy." *Harvard Business Review* 55(6): 85-96.
Shapiro, R. D. (1984). "Get leverage from logistics." *Harvard Business Review* 62(3): 119-126.

Supply Chain Segmentation

Supply Chain Segmentation creates clear and meaningful groups of products and customers for the purpose of strategic supply chain management.

- The supply chain priorities and operating strategies that support the needs of each segment will be different.
- This does not imply separate physical chains. The supply chains that serve the segments will likely share resources and activities.

Segmenting for Logistics

A Menu for Establishing Customer Needs

Potential Variables for Segmenting Products

Product Strategy and Economics

1) Unit value (*Low margin? High full-stream cost?*)
2) Sales volume (*Unit sales per year?*)
   Nature of relationship
   (*Long-standing? Transactional?*)
   Capacity to draw in others

Special Interaction Requirements

3) Degree of order coordination
   (*Independent line items? Complete systems?*)
   Accuracy of delivery timing
   (*15-minute window? Plus or minus 3 days?*)
   On-site service (*Dump? Installation?*)
4) Merchandising (*Product displays? Promotions?*)
   Order taking (*EDI? In-person? Involved?*)
   Product preparation (*Standard? Custom?*)

Standard Delivery and Order Requirements

5) Order response time (*Hours? Days? Weeks?*)
   Frequency (*Times per day? Irregular?*)
   Order quantity (*Individuals? Truckloads?*)
6) Product shipment norms (*Parcel? Truckload?*)
   Destination locations (*Clustered? Scattered/Rural?*)
   Packaging (*Returnable? Custom?*)
   Demand patterns (*Seasonal? Derived or "pulled" demand?*)

Handling Requirements

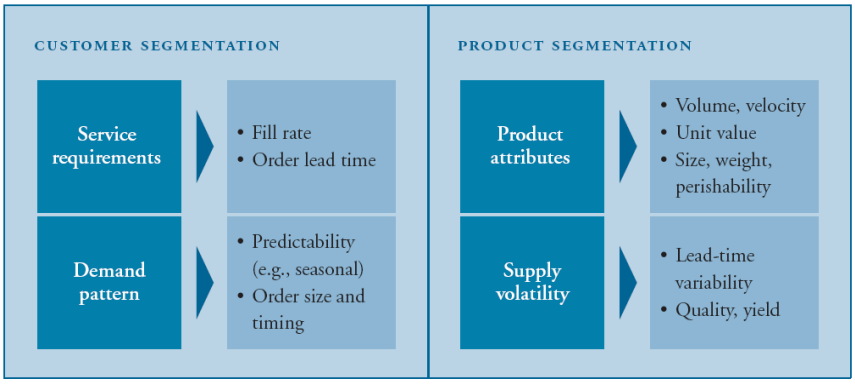
7) Product handling characteristics
   (*Binnable? Bulk? Liquid?*)
   Demand variability (*Predictable? High variance?*)

Inventory Requirements and Potential for Defection

8) Product substitutability
   (*Unique? Highly interchangeable?*)
   Cost of no stock/no delivery
   (*Lost sale? Customer plant closure?*)

Source: Fuller, J. B., et al. (1993). "Tailored Logistics: The Next Advantage." *Harvard Business Review* 71(3): 87-98.

Segmenting for Logistics

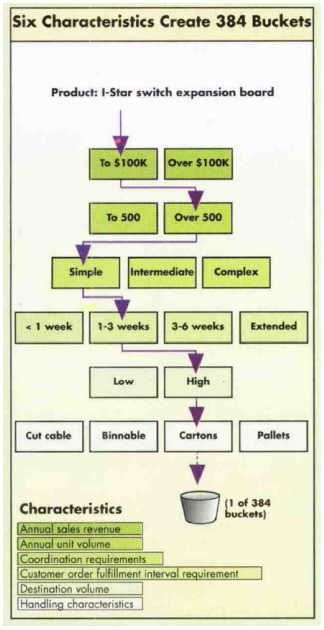


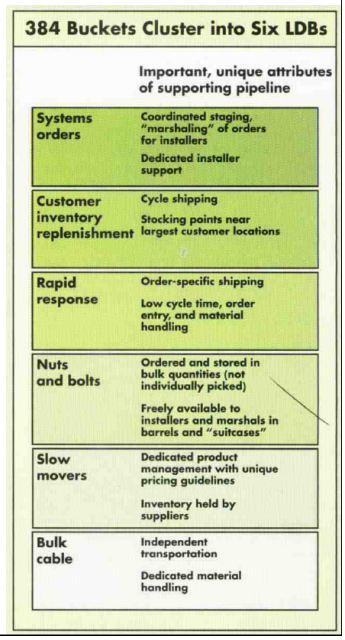
Source: A.T. Kearney

Source: "How Many Supply Chains Do You Need?" A. T. Kearney Report, 2004.

Logistically Distinct Businesses

IMATEL example





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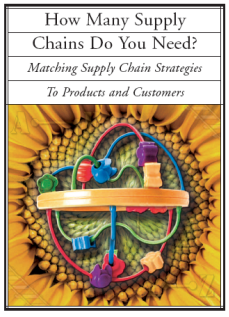
Logistically Distinct Businesses



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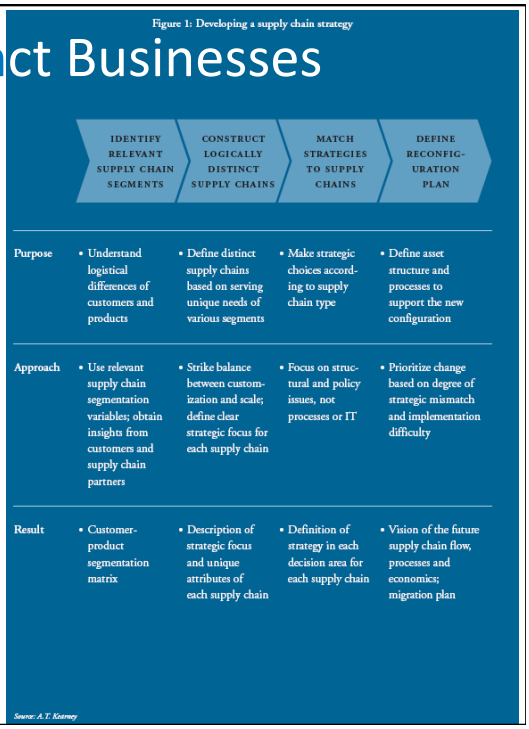


Framework for Distinct Supply Chains

Exhibit III **Leverage through logistics**

Chosen modes of competition	Product innovation	Customer service	Cost leadership
Goals of logistics system	Availability Flexibility to volume shifts Flexibility to product changes Ability to handle small orders Ability to handle erratic order frequencies	Rapid delivery Consistent delivery Availability Flexibility to customer changes	Minimum cost with an "acceptable" service level
Locus of planning	Line management	Line management	Staff
Procurement	Seek vendors who can ensure: Supply continuity Quality Flexibility to changes in specifications	Seek vendors who can ensure: Consistent delivery Full-line availability Responsiveness	Make maximum use of volume purchase economies Centralized purchasing organization Seek vendors offering low prices
Inventory policy	Tension between the need for high safety stocks kept locally to ensure availability and the need to keep inventories low to retain flexibility and guard against obsolescence: a compromise between these two extremes is required; the form of that compromise will depend on a variety of technological, physical, economic, and competitive factors; most important are pace of product change and competitive intensity	For the company that produces to inventory, local inventories will be required for "market presence" and rapid, consistent delivery	Investment in inventory at minimal levels that ensure "acceptable" service
Transport policy	Premium, rapid transport (air freight if sensible) Use of common carrier rather than investment in private fleet LTL* shipments common	For normal supply, a mix of short-haul LTL* (for customer delivery) and long-haul TL** or CL† (for warehouse restocking) Emergency shipment network planned and available when needed Private fleet may be necessary for service (especially short-haul)	Low-cost transport (rail and/or piggyback) High utilization (full TL** or rail carload shipments) Volume discounts to encourage direct-from-the-plant, full-carload shipments Private fleet may be desirable for better control, lower transport costs
Facilities network	Almost nonexistent in most cases – delivery from plant to customer When warehouses required, public or leased warehouses used	For the company that produces to inventory, a multiechelon system (plant or national warehouses, regional warehouses, local warehouses) will be likely	Centralized Consolidated (minimize number of local facilities) Rationalized (number, size, scale) and sourcing decisions made to minimize costs Automated as much as is sensible

Source: Shapiro, R. D. (1984). "Get leverage from logistics." *Harvard Business Review* 62(3): 119-126.

Framework for Distinct Supply Chains

- Strategy is choices about
  - customer integration
  - value-add focus
  - supplier structure & relationship
  - capacity
  - asset deployment

Source: "How Many Supply Chains Do You Need?" A. T. Kearney Report, 2004.

Figure 4: Match strategies to supply chains

STRATEGY	EFFICIENT SUPPLY CHAIN	QUICK RESPONSE SUPPLY CHAIN	INNOVATIVE SUPPLY CHAIN
Customer integration	• Basic, efficient order fulfillment; limited and highly selective direct customer contact and support	• Joint inventory management processes and information systems	• Highly focused account and order-centric organization structure
Value-add focus	• Manufacturing and physical distribution	• Strategic inventory planning and deployment	• Product design and supply chain management
Supplier structure and relationship	• Low-cost; consistent quality and delivery	• Short, consistent lead time; high quality service	• Global network of trusted partners and specialists; flexibility
Capacity	• Maximum capacity utilization of plants, warehouses and transportation	• High surge capacity in operations and transportation for quick response	• Minimum inventory and bricks and mortar investment; leverage suppliers' capacity
Asset deployment	• Consolidated distribution services; inventory held at few, large centralized facilities	• Distributed multi-echelon system; stock points close to customers	• Minimum finished goods and WIP inventory; suppliers hold raw materials; highly dispersed supplier manufacturing assets
EXAMPLES	*Staple grocery goods*	*Emergency spare parts*	*Fashion apparel*

Source: A.T. Kearney

Grocery Retailer – one store but complex operations

- Products
  - Dairy, meat, produce, frozen, floral, bakery, deli, health & beauty, general merchandise, pharmacy
  - Common or distinct DCs?
  - Multi-temp or distinct trucks?
- Services
  - Direct Store Delivery (Coca-Cola, Frito-Lay,…)
  - Promotional items, store displays
  - Returns (packaging, product)
- Fulfillment
  - Cross-dock replenishment from manufacturer
  - Stock at DC

Grocery Retailer Segmentation

Table 1. Characteristics That Retailers Consider in Doing a Segmentation

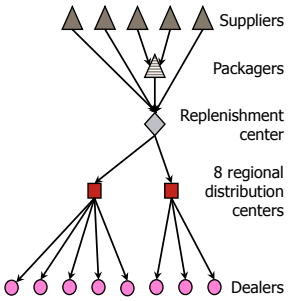
Product Characteristics	Store Characteristics
• Value • Sales volume • Shelf life • Cold chain requirements • Bulkiness • Type of supply (pallet, box, item) • Incompatibility with other products • Substitutability • Supplier power • Profit per unit • Sales pattern (daily essentials, ongoing sale/fast movers, planned advertised sale or promotional items, slow movers, surge items, … special buys)	• Location (urban/rural) • Store sales volume • Demand distribution for that geography • Transport and warehouse options for that geography • Number of products and product categories • Unit of sale to the consumer (item, box, pallet) • Sales per square foot per day or per hour

Segment 1: Dry goods that are supplied in high volumes on pallets to large urban stores
Segment 2: Dry goods that are supplied on pallets to rural stores
Segment 3: Cold chain items for urban and rural stores
Segment 4: Short shelf life items for urban and rural stores
Segment 5: Products supplied directly by suppliers to stores
Segment 6: Planned advertised or promotional items and special buys for urban and rural stores, etc.

Ford Parts Supply Chain: Initial Segmentation

Product segment 1			Product segment 2
Service segment 1	Service segment 2	Service segment 3	
Stock Orders	Service Orders	Emergency Orders	Slow movers
• 60k SKUs stocked at all Regional DCs • Once per week on truck route • Dealer carries high inventory	• 60k SKUs stocked at all Regional DCs • Twice per week on truck route • Dealer carries low inventory	• From Regional DC or National Replenishment Center • On request from Dealer for "critical" repairs • Express shipment	• 140k SKUS stocked only at the National Depot • Shipped directly to Dealer via LTL
Oil change	Water pump, bumper	A/C on luxury car	Out-of-production

"large, one-size-fits-all local warehouses carrying high volumes of a broad selection of parts"

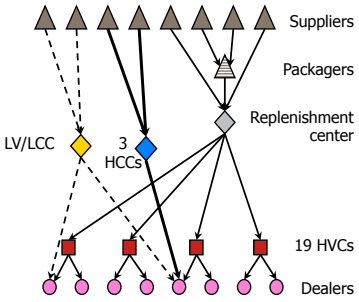


Ford Parts Supply Chain: Final Segmentation

Daily Parts Advantage (DPA) program

Three distinct fulfillment approaches to give the same next-day service to dealers

High Volume	Low Volume / Low Cube	High Cube
• 19 HVCs carrying fewer SKUs • Smaller, high-volume parts • Delivered daily to dealers	• 1 LV/LCC • Small, slow-moving parts based on critical orders available within 24 hours (express not LTL)	• 3 HCCs • Large-size inventory items (e.g. sheet metal, bumpers) provided to dealers within 24 to 48 hours



Segmentation

1. Corporate strategy alignment: financial structure/ objectives, product life cycle, market segments
2. Competitor strategy
3. Service to end-users / service to customers (bundle of products AND related services)

Define the distinct segments of products and services for Shell Chemicals.
Discuss in a group of 3-4 people.

A Menu for Establishing Customer Needs

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Special Interaction Requirements

3) Degree of order coordination
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Inventory Requirements and Potential for Defection

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(*Unique? Highly interchangeable?*)
Cost of no stock/no delivery
(*Lost sale? Customer plant closure?*)

Supply Chain Strategy

SEGMENTATION
(products, services)