

# Supply Chain Optimizers

## Packaging Optimization

How Designing Shipping Cases to  
Suit the Entire Supply Chain  
Delivers Amazing Savings

# What Do We Do?

- Utilize both sophisticated computer models and years of practical experience
- Synchronize the relationship of shipping containers, warehousing & transportation to achieve lowest total cost for clients
- Can help any company shipping in bags or corrugated boxes
- SCO is an independent service whose only goal is to make our clients more efficient

# Supply Chain Premise

Efficiency is dependent on two factors:

1. Network – System of linking factories & distribution centers to customers
  2. Product – Volume & physical attributes of shipping cases
- #1 is a distance issue...#2 is a density issue
  - *Our optimization efforts focus on holistic supply chain impact to cut costs for clients*

# Representative Client List

- Kimberly-Clark
- Canada Packers
- Rich Products
- Lillian Vernon
- Keebler
- General Electric
- Wrigley
- Stanley Works
- R G Barry
- John Deere Parts
- Nestle [8 divisions]
- A T Cross
- Office Depot
- Robin Hood Multifoods
- Church & Dwight
- Fisher Scientific
- ACCO Brands
- George Weston [10 div.]

# Supply Chain Issue

- Shipping case size, strength and shape decision is typically made by:

Brand Management

Quality Control

Manufacturing

Corporate Packaging

Research & Development

Marketing

Corrugate Supplier

Plant Management

- *The costs show up in Logistics which is usually not involved in this decision*

# Business Background

- Completed 300+ assignments over 20 years
- No direct competitors
- Much of our work has been in frozen foods but we also have experience in hard goods, giftware, soft goods, bulk products, mail order
- All of our associates have over 20 years of supply chain experience in a variety of industries

# SCO Publicity

- CLM Annual Conferences
- Canadian Assoc of Logistics
- GMA Logistics Conference
- Bob Delaney's State of Logistics Report  
identified packaging optimization as *last major logistics opportunity* and SCO as the leader of the category

# Leading Accomplishments

- #1 powdered detergent manufacturer saved \$500,000 by changing shipping case orientation 1/16<sup>th</sup> inch....also generated 3 retail facings in same space as 2 previously
- #1 office products manufacturer saved \$1.5 m
- #1 sanitary item company saved \$2 Mil
- #1 frozen dough company saved \$3 Mil
- #1 frozen snack company saved \$5 Mil



# Visible Benefits

- Have experienced a remarkable improvement in packaging strength, cube utilization and damage control
- Positive changes in packaging design, pallet configurations and unit load improvements
- Virtually no case fatigue or damage related to poor packaging
  - EVP of 3PL partner handling Rich's, Rosina Foods, Chef America

# Rich Products Case

- Initial analysis done on 23 frozen items
- Included doughnuts, breads, creamers
- Total savings identified = \$3+ million
- Project is documented in Packaging Digest as well as six other magazines and has been presented at five national conferences

# Ice Cream Cookies

## Original Shipping Case

- One pallet high before it crushed
- Pallet area utilization = 97%
- Pallet cube utilization = 96%
- Each pallet held 3,132 cookies

# Ice Cream Cookies New Shipping Case

- Now stackable two pallets high
- Pallet area utilization = 100%
- Pallet cube utilization = 95%
- Each pallet now holds 4,212 cookies

*34% increase in product per pallet*

# Associated Cost Reduction On Ice Cream Cookies

Packaging 33%

Freight 20%

Warehousing 25%

*Permanent Annual Saving* 23%

# Restaurant Salad Dressing

- All competitors use a one gallon container and pack 4 in each case
- Market leader has optimized its packaging and gained the following advantage:
  - 14% less material in shipping case
  - 16% lower handling cost
  - 33% lower storage cost

# Success Factors

- We know how the supply chain impacts corrugated boxes
- We also know how corrugated box size, strength, stacking specs and damage impact the supply chain
- *We are the only company in North America that optimizes supply chains through packaging*

# Box Efficiency

- Most economical box has ratio of  
 $L2 - W1 - D2$
- Example:  $10 \times 5 \times 10 = 500$  cu in  
 $25 \times 5 \times 4 = 500$  cu in
- Box #2 uses 20% more corrugated
- *There are more than 10 different ways to construct a box....each impacts cost differently*



# Impact of Pallet Patterns

Interlock?

Overhang?

Box Strength

No

No

100%

No

Yes

68%

Yes

No

55%

Yes

Yes

51%

# Stacking Strength

- Interlocked pattern gives better stability but 40% less compression strength than column stacking
- 75% of box compression strength is located in 4 corners of container
- One inch misalignment of box corners reduces compression strength by 43%

# Impact of Storage Time

0 Days	=	Full Strength
1-4 Days	=	70%
Up to 11 Days	=	65%
Up to 31 Days	=	60%
Up to 101 Days	=	55%
Up to 1000 Days	=	50%

*This is in normal ambient temperature warehouse*

# Impact of Humidity

Relative Humidity

Box Strength

45%

110%

55%

100%

65%

90%

75%

80%

85%

70%

100%

50%

# Corrugated Box Supplier

- Make their revenue from total material they sell to users
  - ....the more corrugated a customer uses the more money a supplier makes
- They understand construction of corrugated boxes
  - ....little or no knowledge of supply chain costs, issues, tradeoffs

# Performance Guaranteed

- We will analyze your logistics processes on site so that we can identify changes that work in your system and save you money
- Client actual costs drive the process
- 90 days to implementation is typical
- Client pays no money upfront...we get paid from savings so *if there are none...your cost = 0*

# Credentials

- SCO is staffed with experienced logistics executives who understand transportation & warehousing as well as their cost drivers
- We always outperform those focused only on packaging because we see the big picture
- *We deliver **big** results...our clients and their customers both get improved logistics efficiency and reduced damage*

# Grocery Unsaleables

## Joint FDI-FMI-GMA Study

- \$2.57B in '03 [1.11% of sales]
- 58% [\$1.5B] is damage due to inadequate packaging - handling – logistics practices
- Recommendation: Focus on manufacturing packaging & logistics practices to account for total supply chain from plant to shopping cart
  - .... *best performers focus on both packaging & logistics for maximum benefit*



# Summary

- SCO is the only company in North America that specializes in SC optimization thru packaging
- We have an outstanding track record with 300+ clients over 20 years
- We guarantee results that work for client
- Our work pays for itself and clients start pocketing savings within 90 days
- *SCO gets paid from a share of first year savings....client gets 100% of all subsequent benefit*

# Sam's Cinnamon Rolls

	<u>Original Case</u>	<u>Revised Case</u>
Cube	.928	.800
Void	28%	10%
Logistics cost/case	\$1.57	\$1.23
30 day box strength	230 lbs	328 lbs

*Logistics cost: -22%      Box strength: +43%*

# Disposable Diapers

- Packaging cost reduction 15%
- Warehousing cost reduction  
- both labor & space 33%
- Freight 21%
- Total improvement: 21% worth \$943K  
*...this was on only 3 product codes*

# Maternity Sample Kit

[\$1 million+ in material saving]

## One Can Box

- 200% increase in cases per pallet
- \$283K in material
- Density increases 295% [from 4.08 lbs per cu. ft. to 12.06 lbs]

## Two Can Box

- 65% increase in cases per pallet
- \$763K in material
- Density increases 166% [from 8.17 lbs per cu. ft. to 13.6 lbs]

*full savings impact.....totaled over \$3 million*

# Designer Sandals Imported from Asia

- 64% reduction in packaging cost
  - From \$1271/M to \$454/M
- 40% improvement in freight cost
- 40% improvement in warehousing cost
- 47% total cost reduction
  - \$204K on \$434K base

*...customer gets 66% more product on each ocean container  
from Asia*

# Surgical Room Kits

- 9,000 product codes
- Internal team of 2 industrial engineers, 2 packaging interns & new software generated greatly improved results
- SCO analyzed 2 optimized items
  - item 1 had additional 20% cost reduction
  - item 2 had additional 8% cost reduction after increasing packaging spend by 12%