



TOCICO 2007 Conference

# Finance of TOC Distribution or T,I and OE tell the whole story?

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# Challenges

**Can we answer in a simple and robust manner:**

- **If I implement the TOC Distribution solution on a Retailer, what will be the impact on its profit?**
- **Can I use current Retailer/Distributor numbers in Throughput accounting and take decisions without errors?**
- **Which factors impact the financial result more in a Distribution environment?**

# Agenda

- **Financial Statements and T,I and OE**
- **Revisiting T, I and OE**
- **The truth about T?**
- **Where is my I?**
- **OE is really OE?**
- **The financial impact of TOC Distribution**
- **Modeling the impact**

# Revisiting T, I and OE

## Classic Definition:

- **T** = Throughput

“The rate at which the system generates new money (through sales)”

- **I** = Inventory

“All the money the system invests in purchasing things it intends to sell”

- **OE** = Operating Expense

“All the money the system spends in turning inventory into Throughput”

# Revisiting T, I and OE

## Modern (Generic?) Definition:

- **T** = Throughput

“New money flowing into the system”

- **I** = Investment

“All the money the system holds within it”

- **OE** = Operating Expense

“All the money flowing out of the system (not dependant on T)”

- Key is: real money flows/positions (opposed to artificial ones – i.e. activities with no relationship with the external world)

# Balance Sheets and Income Statements - The true story

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- **What are reports for?**
  - **Fiscal communication -> Taxes**
  - **Managerial communication -> Decisions (Models)**
  
- **Where are my T, I and OE?**
  
- **Reclassifications are the essence**



# Income Statement

- **Usually the source of T and OE**
- **In the distribution/retail it is – usually – closer to the TIOE classification**

# Income Statement Example

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- Zara (Inditex Group):**

	(M Euro)	2006	2005
Sales		8196	6741
Cost of Goods Sold (COGS)	TVC?	-3589	-2953
Gross Margin	T?	4607	3788
General expenses		2800	2297
Other Revenues and Expenses		-17	-32
Operational result		1790	1459
Amotizations and Depreciations		433	366
EBIT	OE?	1356	1094
Financial results		-14	8
Currency adjustments		-3	-0.2
Profit Before Taxes		1339	1101
Taxes		-330	-291
Net Profit		1010	811





# Balance Sheet

- **Usually the source of I (as Investment)**
- **Includes both things that increase I (assets) and decrease I (liabilities)**
- **In a QAD way:**
  - $I = \text{clean assets} - \text{clean liabilities}$**
- **Clean means free of adjustments, revaluations, allocations etc.**
- **Care must be taken because without the “clean” I would be equivalent of Owners Equity**

# Balance Sheet Example

- Zara (Inditex Group):**

	31/1/2007	31/1/2006		31/1/2007	31/1/2006
<b>Assets</b>	<b>5.742</b>	<b>5.203</b>	<b>Liabilities</b>	<b>5.742</b>	<b>5.203</b>
<b>Current assets</b>	<b>2.148</b>	<b>2.047</b>	<b>Current liabilities</b>	<b>1.885</b>	<b>1.851</b>
Cash & Equivalents	906	988	<u>Payables</u>	1.619	1.510
<u>Receivables</u>	364	327	Financial debts	145	209
<u>Inventory</u>	824	684	Payable income taxes	121	132
Tax benefits/credit	21	31			
Other current assets	34	16			
<b>Non current assets</b>	<b>3.594</b>	<b>3.156</b>	<b>Non current liabilities</b>	<b>387</b>	<b>431</b>
Property and equipment	2.789	2.410	Financial debts	47	76
Investment properties	12	14	Payable taxes	104	107
Local rights	454	411	Provisions	45	42
Other intangible assets	15	9	Other long term liabilities	190	206
Commerce fund	99	79			
Financial investments	33	61			
Equity investments	4	7			
Tax benefits/credit	89	78			
Others	98	87			
			<b>Owners Equity</b>	<b>3.471</b>	<b>2.921</b>

(values in MEuro)



# Does T help or not?

- **Why is T so useful?**
  - Separation of TVC and OE (that is: measures “new money” correctly)
  - Effective way to evaluate the link between unit sales and monetary sales (we want to support decisions not autopsies!)
- **Prices, TVC and their ratio (to Sales) in**
  - Industries/manufacturers: low variation on all
  - Distributors: some variation on TVC and Price (still not big)
  - Retailers: big variations, especially on ratio: Price/TVC (or % T per unit)
- **What happens in retail (and in a lesser degree in Distribution)?**
  - Can we support future/current decisions with T?

# Does T help or not?

- **COGS x TVC what's the difference**
  - Inventory allocation (chupchick)
  - Variation of purchasing prices?
  - Losses, spoilages etc.
  - Operational costs included?
- **And prices?**
- **How can we understand T and KISS?**
  - T @ Full markup – high runners @ begin of season
  - T@ Discount markup – others
  - Losses?

# Quick breakdown

- **A Company,**
  - Clothes retail
  - Markup: 100%

- **Wait:**
  - If Markup=100%
  - %T should be 50%!

- **What happened?**

- **T@ Full markup x T@ discount x Losses & such in TVC (COGS)**

	<b>Today</b>	<b>%</b>
<b>Sales</b>	<b>1000</b>	<b>100%</b>
<b>TVC</b>	<b>800</b>	<b>80%</b>
<b>T</b>	<b>200</b>	<b>20%</b>
<b>OE</b>	<b>150</b>	<b>15%</b>
<b>Profit</b>	<b>50</b>	<b>5%</b>

# Quick breakdown

- How to deal with this?
- Breaking up the components of T
- Does this adds to our capacity for taking decisions?

	Today	%
<b>Sales</b>	<b>1000</b>	<b>100%</b>
Full MUp	600	60%
Discounted	400	40%
<b>TVC (reviewed)</b>	<b>600</b>	<b>60%</b>
Full MUp	300	50%
Discounted	300	50%
<b>T</b>	<b>400</b>	<b>40%</b>
T@ Full MUp	300	75%
T@ Discount	100	25%
<b>OE</b>	<b>350</b>	<b>35%</b>
Original OE	150	43%
Losses / Spoilage	200	57%
<b>Profit</b>	<b>50</b>	<b>5%</b>



# Who's I is this?

- **In distribution a question raised by Goldratt is central:**
- **Who owns the merchandize? (When is a sale final?)**
- **How to re-capture this?**
- **Investment must include:**
  - **Inventories (@ purchasing/RM prices) +**
  - **Accounts receivable +**
  - **Accounts payable –**
- **Decisions may also impact Working Capital requirements in Payables and Receivables**

# Is OE plain simple?

## **Operating Expenses are normally OK, but**

- **We must clean up T of some OE**
  - **Transfer part of COGS (or expenses added to it that bear no direct relationship with sales) to OE**
  - **How to deal with losses**
- **We can use parts of OE as TVC of aggregated operations, possibly:**
  - **Transportation**
  - **Store/POS operation**
  - **Distribution center**



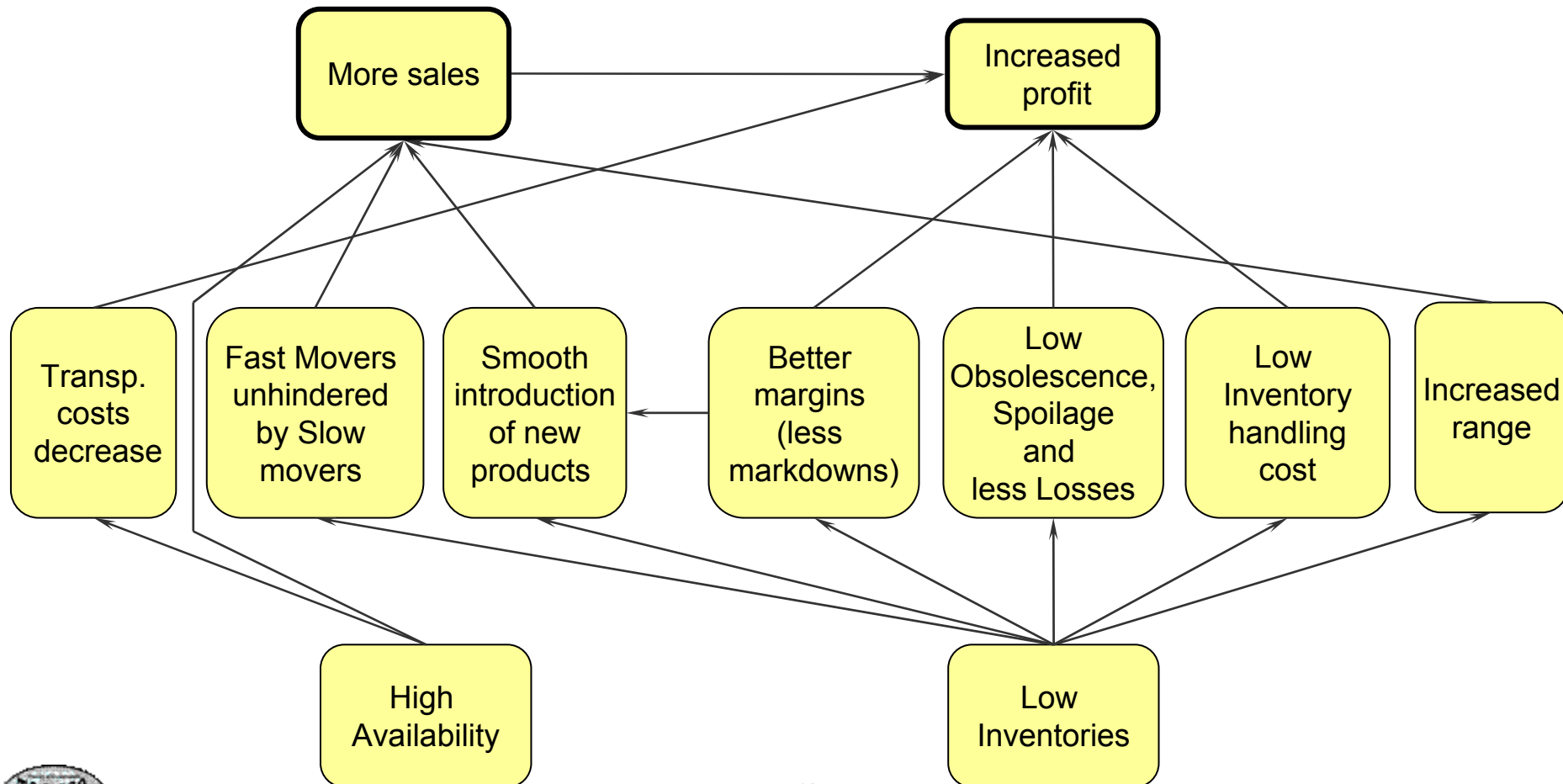
# Impact of TOC Solution on

## What is the expected impact of TOC Distribution on

- **Supplier**
- **Distributor**
- **Retailer**
- **Shortages? Turns? Sales?**

# Avenues of Growth

- Solving the Distribution core dilemma leads to:



# Impact Models

- **After understanding the cause and effect we should be able to roughly model the impact of the solution**
- **Some models:**
  - **Base (floor): Less inventory**
  - **Reducing shortages: Compounding lost sales due to stockouts in time**
  - **Less inventory + less shortages: combining both**
  - **Improving the Mix**

# Base model

- **Objective: evaluate the attractiveness of a Distribution offer to a client (of a manufacturer or a distributor)**
- **What happens when we cannot be sure that the client will capitalize on the reduced shortages and improved turns fully? I.e. the existing inefficiencies in the clients internal distribution persist.**
- **Let's check...**

# Base model

- **Assumptions**

- When the client has more money he re-invests it in his own business (core)
- The ratio of money invested in I and Sales is given by turns measure

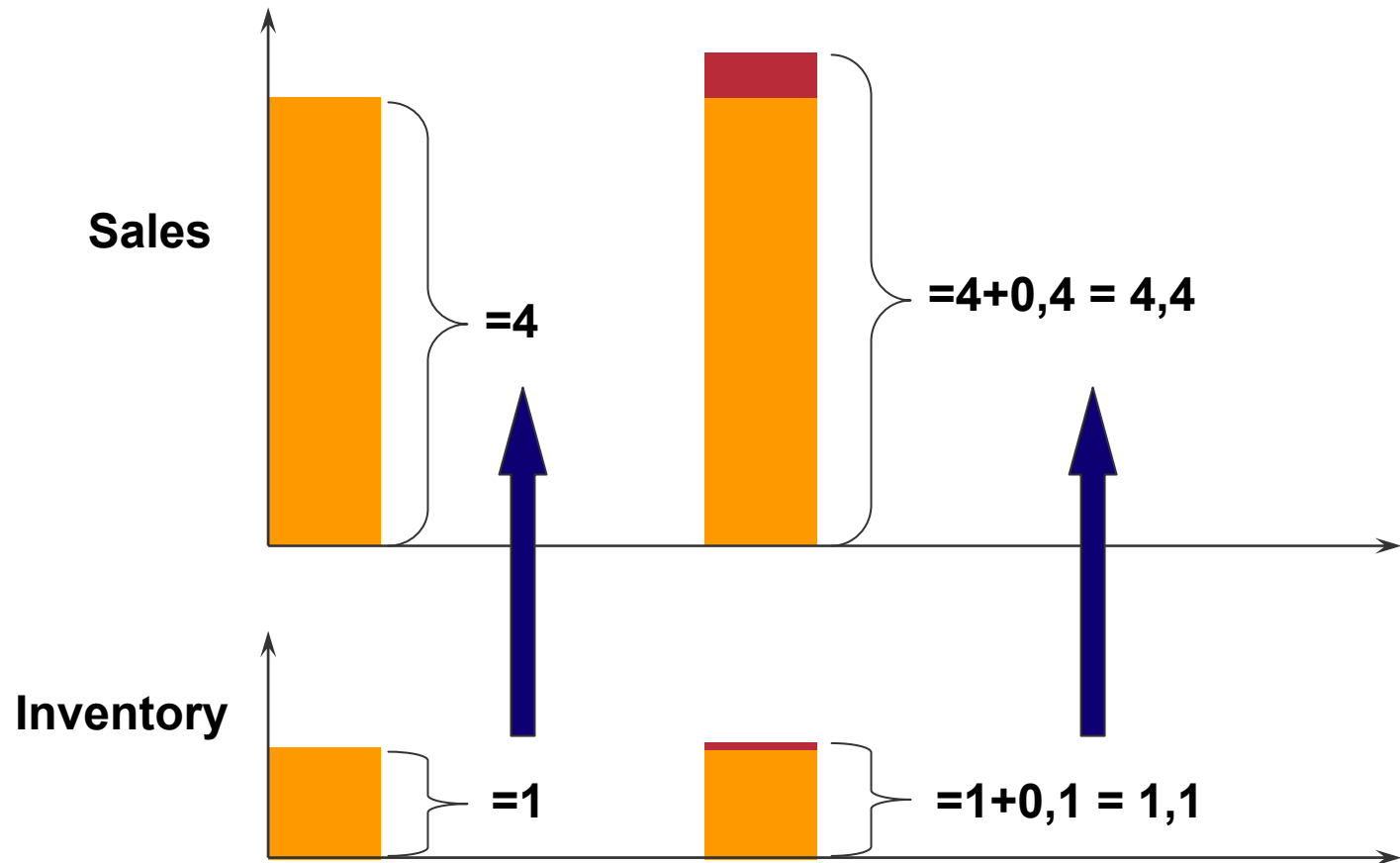
- **Example**

- Our % sales of client is 1%
- Client typical MUp 100%
- Client Turns = 4
- How much more profit?

<b>Client Numbers</b>	<b>Today</b>	<b>%</b>
<b>Sales</b>	<b>1000</b>	<b>100%</b>
<b>TVC</b>	<b>800</b>	<b>80%</b>
<b>T</b>	<b>200</b>	<b>20%</b>
<b>OE</b>	<b>150</b>	<b>15%</b>
<b>Profit</b>	<b>50</b>	<b>5%</b>



# Base Model - Illustrated



# Base Model

- **After 1**
  - Client purchasing more merchandize with the same %T
  
- **After 2**
  - Client only purchasing products to be sold @ full MUp

Parameters:

Particip.	1,0%	1,5%	1,5%
Turns	4		
Our I Reduces to		50%	
Mark Up			100%

	Before	After 1	After 2
Sales	1.000	1.005	1.005
TVC	800	804	803
<b>T</b>	<b>200</b>	<b>201</b>	<b>203</b>
OE	150	150	150
<b>P</b>	<b>50</b>	<b>51</b>	<b>53</b>
Increase in Profits		2%	5%
<b>I</b>	250	250	250



# Shortages over Time Model

- **Objective: evaluate the attractiveness of a Distribution project to a company (retailer or distributor)**
- **What happens when we realize that the shortages persist over time? How much sales can be increased? At what TVC?**
- **Let's check...**



# Shortages over Time Model

- **Assumptions**

- When there are stockouts they are usually of high runners
- High runners usually sell at full markup
- During stockouts the lost sales correspond to the previous (non-stockout) level

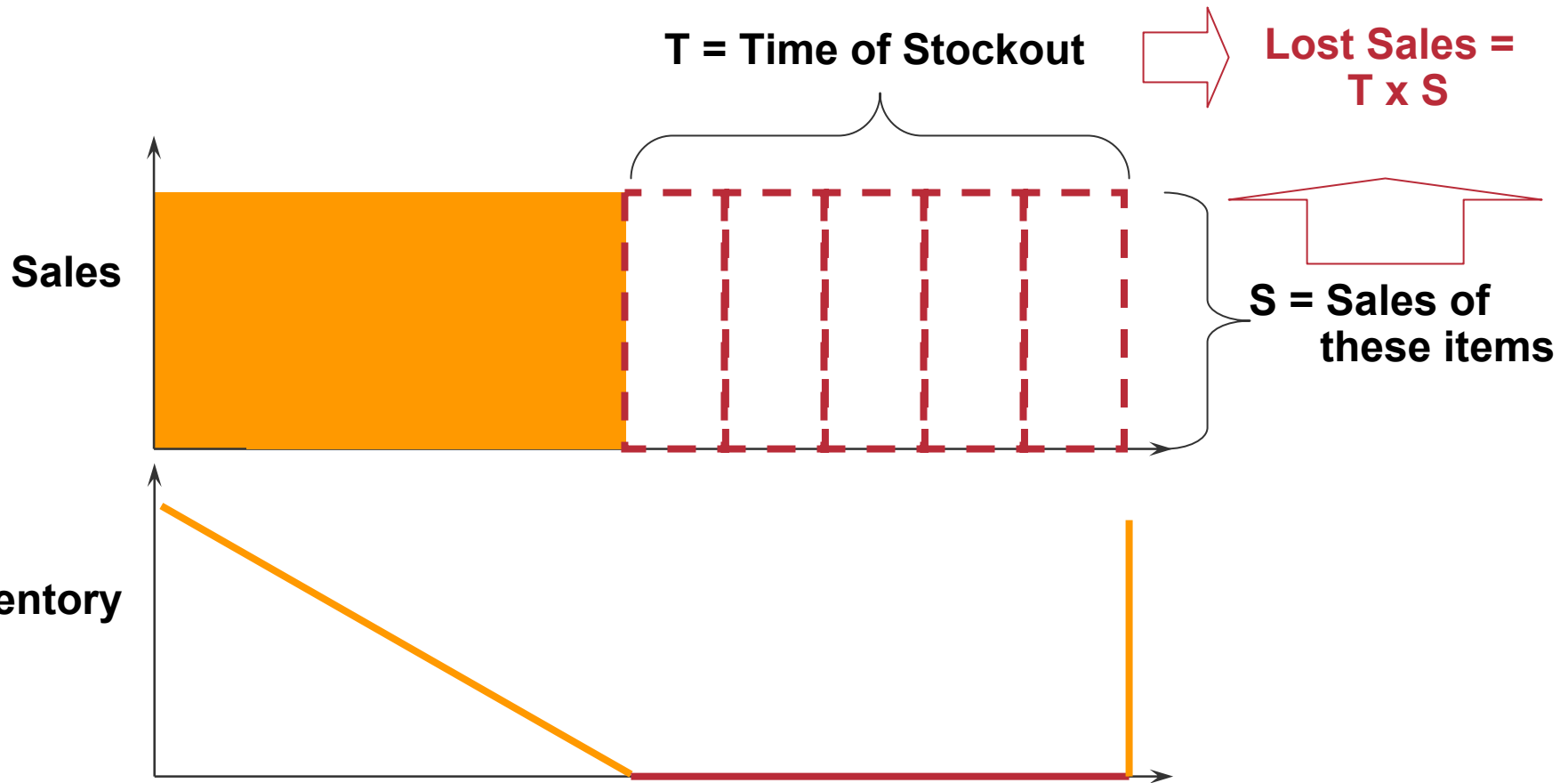
- **Example**

- Shortages= 20%
- Duration= 50% of Repl LT
- Client typical MUp 100%
- How much more profit?

<b>Company's Numbers</b>	<b>Today</b>	<b>%</b>
<b>Sales</b>	<b>1000</b>	<b>100%</b>
<b>TVC</b>	<b>700</b>	<b>70%</b>
<b>T</b>	<b>300</b>	<b>20%</b>
<b>OE</b>	<b>200</b>	<b>20%</b>
<b>Profit</b>	<b>100</b>	<b>10%</b>



# Shortages over Time - Illustrated



# Shortages over Time Model

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- **After 1**

- Working internally only (some stockouts remain due to our suppliers mode of operation)

Parameters:

Shortages	20%	5%	0%
Duration	50%	Of repl LT	
Increase in sales		30%	40%
Mark Up	100%		

- **After 2**

- Working with our suppliers to eliminate the stockouts

	Before	After 1	After 2
Sales	1.000	1.300	1.400
TVC	700	850	900
<b>T</b>	<b>300</b>	<b>450</b>	<b>500</b>
OE	200	200	200
<b>P</b>	<b>100</b>	<b>250</b>	<b>300</b>
Increase in Profits		150%	200%
Profit/Sales	10%	19%	21%



# Less Shortages and less Inventory Model

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- **Objective: evaluate the attractiveness of a Distribution project to a company (retailer or distributor)**
- **What happens when we realize that the shortages persist over time? How much sales can be leveraged? At what TVC?**
- **And what can we do with Inventory reductions?**
- **Let's check...**

# Less Shortages and less Inventory Model

- **Assumptions**

- When there are stockouts there are usually of high runners
- High runners usually sell at full markup
- During stockouts the lost sales correspond to the previous (non-stockout) level
- The amount of inventory needed to service at the same service level as today is significantly smaller under TOC
- Cash freed up by Inventory reduction will be reinvested in Inventory

- **Example**

- Shortages= 20%
- Duration= 50% of Repl LT
- Client typical MUp 100%
- How much more profit?

<b>Company's Numbers</b>	<b>Today</b>	<b>%</b>
<b>Sales</b>	<b>1000</b>	<b>100%</b>
<b>TVC</b>	<b>700</b>	<b>70%</b>
<b>T</b>	<b>300</b>	<b>20%</b>
<b>OE</b>	<b>200</b>	<b>20%</b>
<b>Profit</b>	<b>100</b>	<b>10%</b>



# Less Shortages and less Inventory Model

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- **After 1**

- Working internally only (some stockouts remain due to our suppliers mode of operation)

- **After 2**

- Working with our suppliers to eliminate the stockouts and further reduce I

Parameters:

Turns	4,0	7,0	9,5
Reduction in I		20%	33%
Shortages	20%	5%	0%
Duration	25%	Of repl LT	
Increase in sales		20%	27%
Mark Up	100%		

	Before	After 1	After 2
Sales	1.000	1.400	1.597
TVC	700	940	1.064
<b>T</b>	<b>300</b>	<b>460</b>	<b>532</b>
OE	200	200	200
<b>P</b>	<b>100</b>	<b>260</b>	<b>332</b>
Increase in Profits		160%	232%
Profit/Sales	10%	19%	21%
<b>I</b>	250	200	168
Excess I		50	83
More sales with this I		200	330

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# Improving Mix Model

- **Assumptions**

- We have many more SKUs available than those present on the point of sale (POS)
- We can adjust the portfolio (mix) using aggregated information
- The breakdown of high, medium and slow runners follow Pareto

- **Example**

- Pareto: 20% of SKUs represent 80% sales (high runners)
- Other SKUs follow the same power law
- We substitute 16% of the slow runners with new high runners
- Markup = 100%
- How much more profit?

<b>Company's Numbers</b>	<b>Today</b>	<b>%</b>
<b>Sales</b>	<b>1000</b>	<b>100%</b>
<b>TVC</b>	<b>700</b>	<b>70%</b>
<b>T</b>	<b>300</b>	<b>20%</b>
<b>OE</b>	<b>200</b>	<b>20%</b>
<b>Profit</b>	<b>100</b>	<b>10%</b>



# Improving Mix Model

- Sales breakdown:

		Before		After	
Runners	# SKUs	Sales	# SKUs	Sales	
A High	20%	80%	20%+16%= 32%	80%+64%= 144%	
B Medium	16%	16%	16%	16%	
C Low	64%	4%	64%-16%= 48%	4%-1%= 3%	

**Delta Sales=+63%!**





# Improving Mix Model

- **After 1:**
  - **Same TVC/Sales**
  - **Bogus!**
- **After 2:**
  - **Using the correct TVC (via Markup since we're increasing high runner sales)**

Parameters:

Pareto of runners:	# SKUs	Sales	New Sales
High (A)	20%	80%	144%
Medium (B)	16%	16%	16%
Slow (C)	64%	4%	3%
Removal of Slow Runners			16%
Mark-Up	100%		

	Before	After 1	After 2
Sales	1.000	1.440	1.440
TVC	700	1.008	920
<b>T</b>	<b>300</b>	<b>432</b>	<b>520</b>
OE	200	200	200
<b>P</b>	<b>100</b>	<b>232</b>	<b>320</b>
Increase in Profits		132%	220%
Profit/Sales	10%	16%	22%



# Quick Map

- How to organize the models and establish a range of probable impact:

<b>Avenue</b>	<b>Conservative</b>	<b>More realistic</b>	<b>Extra impacts due to:</b>
<b>Shortages</b>	<b>% Shortages → Sales</b>	<b>% Shortages over time → Sales</b>	<ul style="list-style-type: none"><li>• Impulse and cross sales</li><li>• Freshness effect</li><li>• Mouth to Mouth</li><li>• Etc.</li></ul>
<b>Surpluses</b>	<b>Turns x Investment Freed → Sales</b>	<b>Pareto of Mix → Sales</b>	

# Key Points

- **Throughput is not clear without some investigation**
  - Markup
  - Modes of sales: Full MUp and Discounted
  - Losses
- **Inventory and sales**
  - Less inventory = more sales
  - Turns
- **Stockouts over time**
  - Lost sales > stockouts
- **Mix**
  - Enormous potential impact on sales

# Thank You

- **Questions, comments?**



# About Humberto

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- **Husband and father changing the world one person at a time**
- **Scientist seeking to apply science to people's endeavors**
- **Hunter of hidden assumptions**
- **Teacher, student and colleague of students**
- **Believer of values over tools**
- **Partner in crime at Goldratt Schools (and Group)**



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