



THE BUSINESS END

OF

I.T.

(PART 1)

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Class Objectives



1. **Introduce you to broader business concepts**; how businesses make money
2. **Highlight** the commonalities, differences, and types of **opportunities in various business models**
3. **Introduce Business Finance**

Section #1

Business Models & Their Opportunities

Industrial



Telecom Provider



Retail



Health Care Provider



Financial Service / Lender

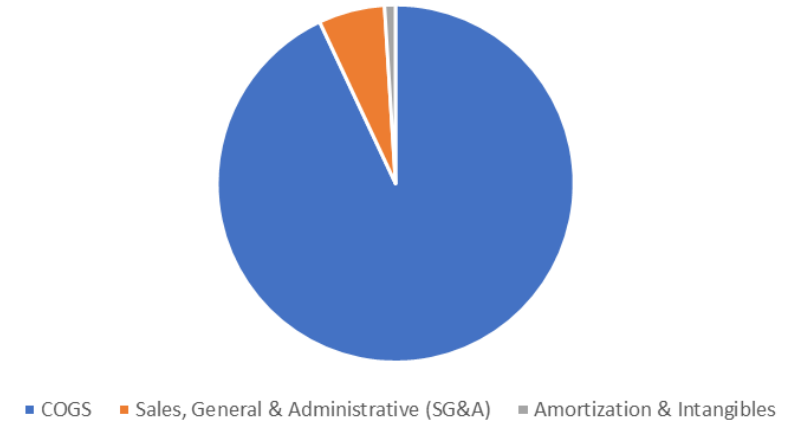


How Typical Business Models Make Money

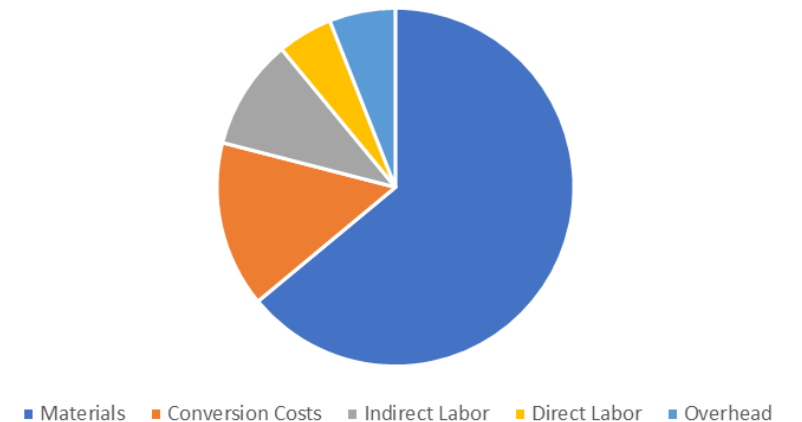
■ Industrial:

- *Heavily capitalized: Plants, machinery, inventory. Substantial margins*
- *Comparatively long lead times: Raw materials, manufacturing, distribution, delivery*
- *Highly sensitive to material costs*
- *Experiencing automation-based transformation in operations, digital transformation in sales, marketing, product development*
- *Explain why COGS is so important*

Manufacturing Expense Categories



Manufacturing Cost of Goods Sold



Industrial: Most Fertile Opportunities for Profit Improvement

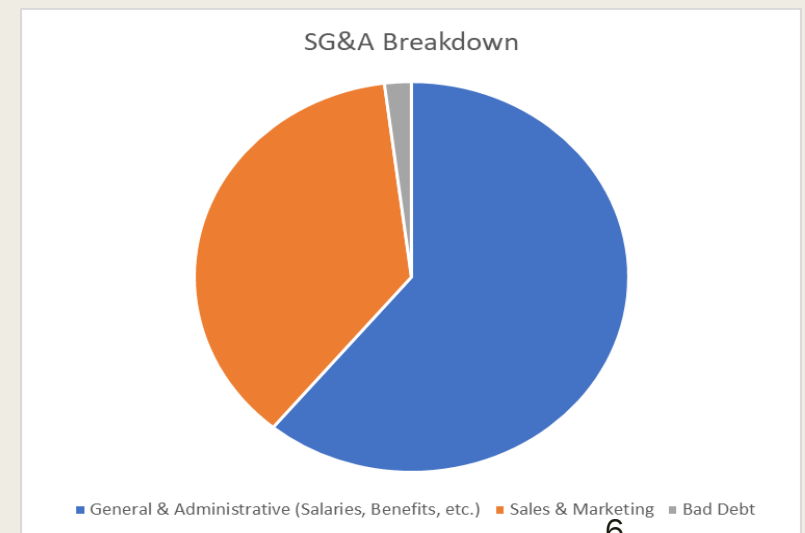
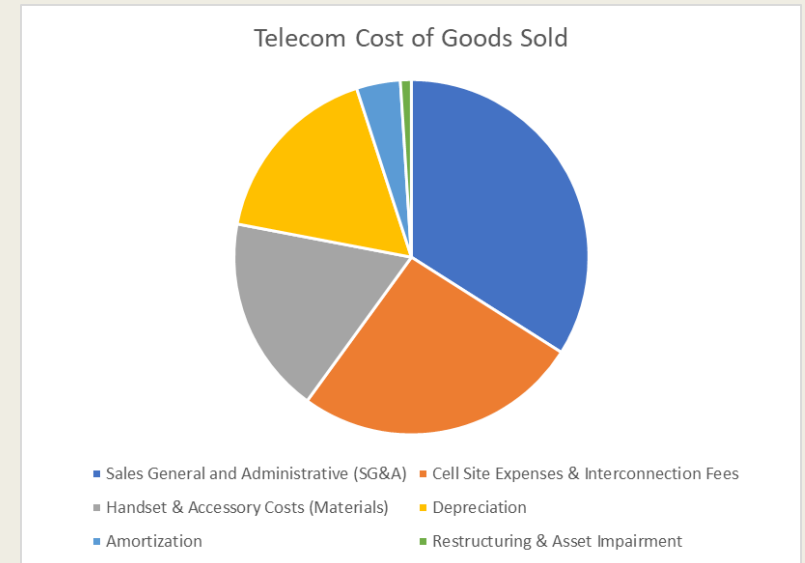
1. Material Cost Reductions
 - *Yield improvements*
 - *Vendor consolidation / negotiation leverage*
 - *Material replacements*
2. Maintenance, Repair & Overhead (MRO) Cost Reductions
 - *Vendor consolidation / negotiation leverage*
 - *Waste reduction via inventory turns*
3. Logistics Cost Reductions
 - *Route and volume analysis*
 - *Vendor consolidation / negotiation leverage*
4. Plant & Equipment Utilization Improvement
 - *ID of critical assets*
 - *Capacity Utilization Analysis*
 - *Work redeployment*
 - *Preventive maintenance*



How Typical Business Models Make Money

■ Telecom Provider:

- *Medium levels of capitalization for property and inventory*
 - Most investment in cell site equipment & interconnection costs.
 - Second-highest is Advertising
 - Third highest is salaries
- *Substantial margins*
- *Highly sensitive to retail space lease costs, salaries*



Telecom: Most Fertile Opportunities for Profit Improvement

1. Reducing Redundancies

- *Switches & other network equipment*
- *Distribution centers (and thereby inventory)*
- *Retail outlets (and thereby inventory and salaries)*

2. IT Improvements

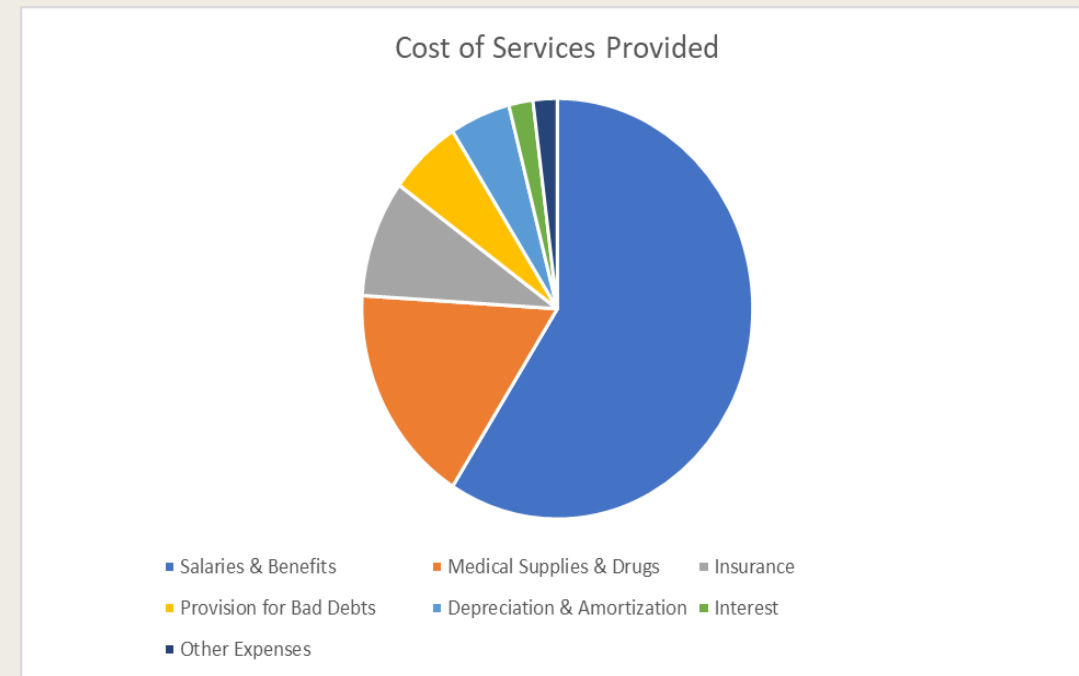
- *Database integration & consolidation (reduces cost and leverages high-cost resources)*
 - *Combine wireless, local, and long-distance databases for customers in geographical regions*
 - *Enable client to virtually isolate and test an environment containing the full spectrum from sales territories to network services*



How Typical Business Models Make Money

■ Health Care Provider:

- *Medium levels of capitalization, primarily property, with substantial medical supplies / drug related costs*
- *Very sensitive to Salaries & Benefits*
- *Regulation constrained, highly sensitive to Personally Identifiable Information (PII)*
- *Major focus on medical records management*
- *Pharmaceuticals cost management is key issue with baby boomer aging*



Health Care: Most Fertile Opportunities for Profit Improvement

1. Internet-born Medical Information Availability

- *Make some information available directly to the consumer (note: Cybersecurity and data privacy issues here)*
- *Take advantage of the advertising revenues flowing from that activity*
- *Identify adjacent markets such as medical care provider listings, continuing medical education (CME), and advertising revenue from publishing health-related magazines and newsletters*

2. Centralizing Functions Around Common Processes & Systems

- *Centralize processes*
- *Apply standards and common tools in IT areas*
- *Vendor consolidation / negotiation leverage*

3. Critical Equipment Utilization Improvement

- *ID of critical assets*
- *Capacity Utilization Analysis*
- *Work redeployment*
- *Preventive maintenance*

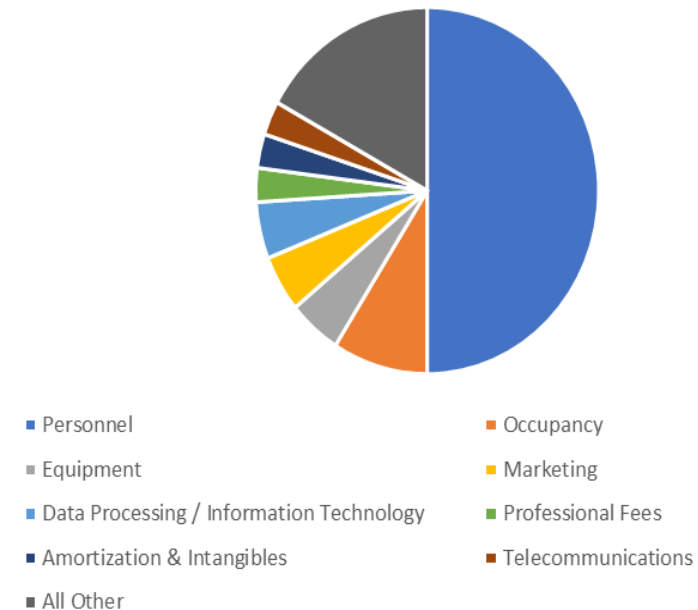


How Typical Business Models Make Money

■ Financial Lender:

- *Relatively low levels of capitalization for property and inventory*
- *Relatively high margins – very low overhead levels*
- *Highly sensitive to regulatory environment, prime lending rates*
- *Cost drivers are salaries and property leases*
- *Entirely dependent on information technology*

Cost of Operations (Non-Interest Expenses)



Financial Lender: Most Fertile Opportunities for Profit Improvement

1. Evaluate Branch Distribution System

- *Eliminate redundancies / overlap in territory coverage*
- *Standardize lending authorities, matched to regional needs*
- *Develop systematic evaluation and culling process for closing down poor performing branches*

2. Personnel Cost Reductions

- *Centralization and commonization of processes and systems*
- *Consolidation and reconfiguration of the organization to face the customer base more effectively*

3. Improve Marketing

- *Identify success criteria for sales campaigns, match to relevant regions to improve batting averages*
- *Waste reduction via inventory turns*



The UMB Bank Story

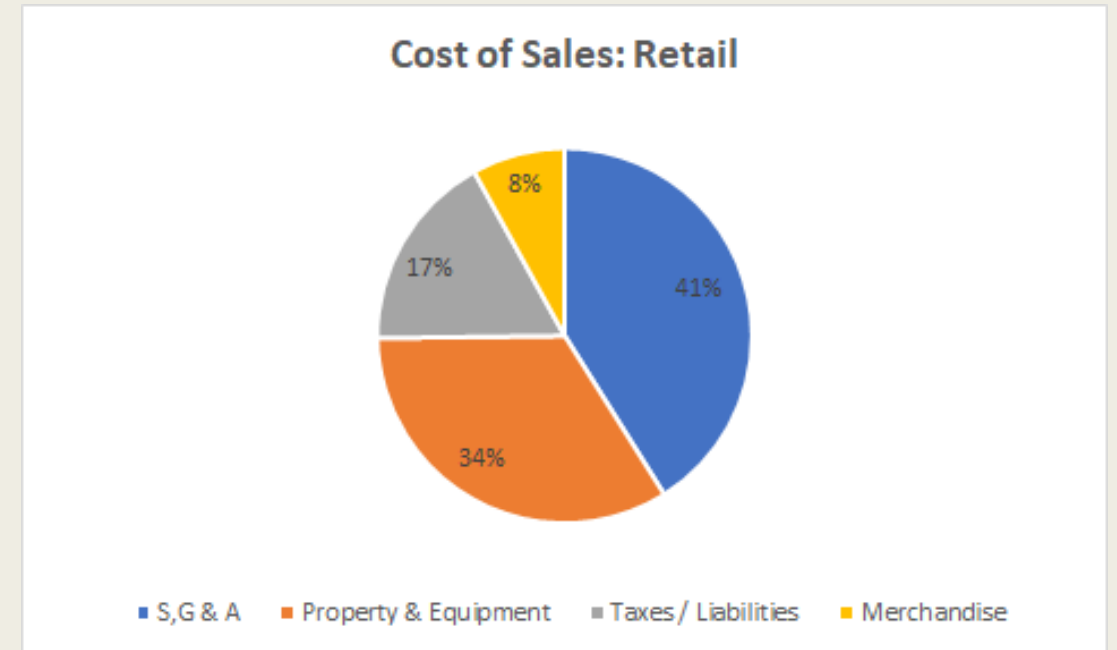
The banking industry holds similar lessons. In their financial report from 2004, UMB Bank indicated that, following their latest round of acquisitions, they were “....diligently working to become more efficient and to eliminate redundancies across our organization.” While UMB emphasized that they have empowered their regional market leaders by increasing lending authorities, they also mentioned that they had “centralized many of our operations for efficiency UMB said: “....we also began reviewing our branch distribution system. We are carefully looking at each of our locations to determine which has the best opportunities for the most significant growth. By the same token, we are making the difficult decisions to close branches that do not present bottom-line contribution and a reasonable opportunity for future growth. This process is critical to our future success.”

This focus on gaining commonality in processes and systems, and using that commonality to leverage the enterprise-wide assets of the business, is indeed critical to success – not only for UMB Bank, but for all companies that intend to mature effectively and grow.

How Typical Business Models Make Money

■ Retail:

- *Medium level margins, but low margins (~3% at WalMart, Target) Requires volume for success*
- *S,G & A (Salaries) are often 30% of COGS*
- *High property / lease costs – typically 25% of COGS*
- *Highly sensitive to inventory turns*
- *Food retail is highly sensitive to shelf life*
- *Heavily impacted by social media – both as a sales tool and as a quality checking source*



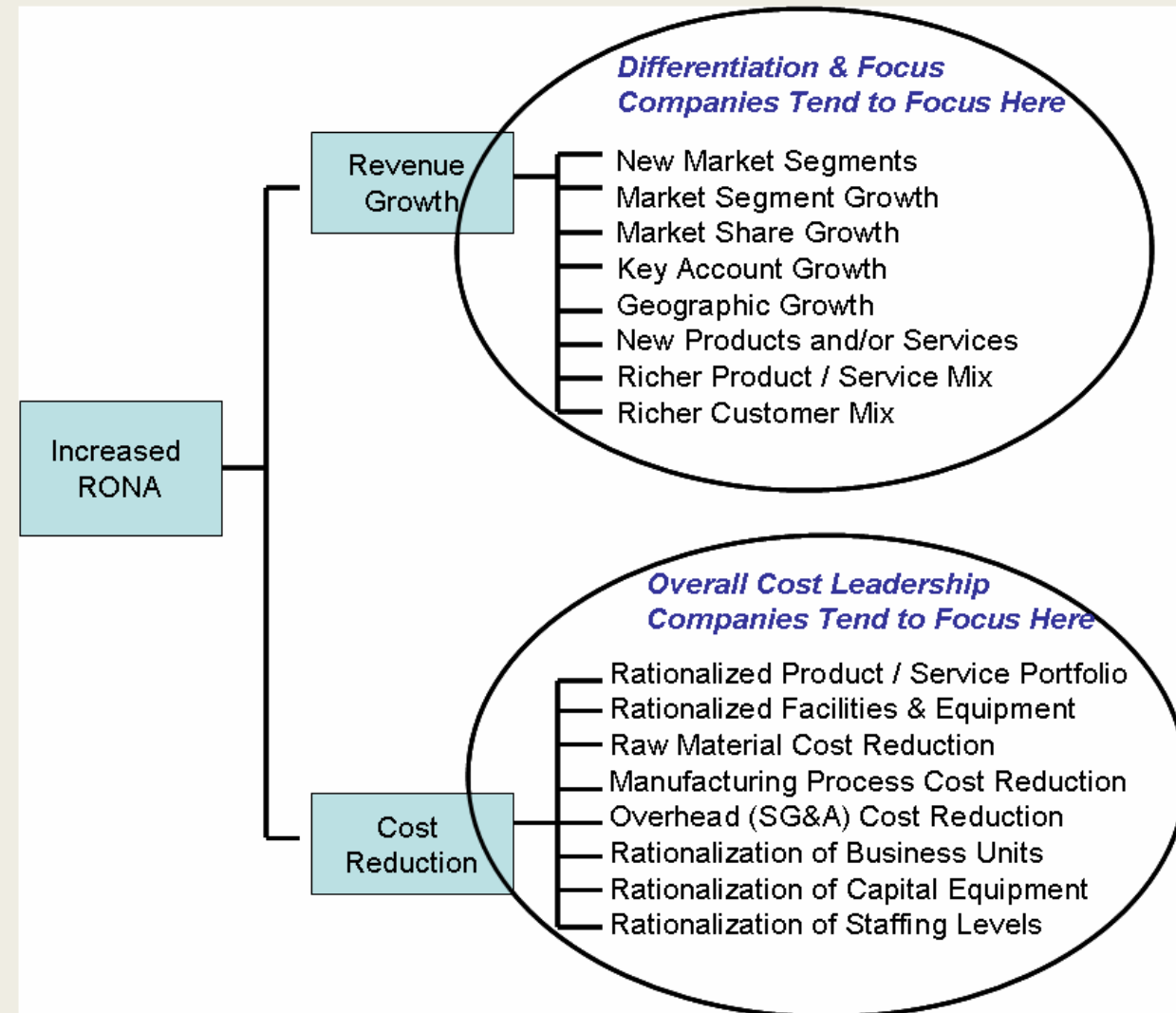
Retail: Most Fertile Opportunities for Profit Improvement

1. Shifting from “Bricks to Clicks”
 - *Reduces salary / personnel related costs*
 - *Dramatically reduces property / equipment costs*
2. Improvements in On-Line Marketing & Sales
 - *Improves market access to younger consumers*
 - *More rapid response to trends in discretionary spending*
 - *Closer to real-time market trend visibility*
 - *More rapid response to safety / quality concerns*
3. Partnering with On-Line Oriented Delivery Entities
 - *Uber*
 - *Other private contractors*



Approaches for Targeted Improvement

- **Revenue Growth:** Internet-based competitive intelligence, market analysis, market studies. Agile prototyping & sales. Developing revenue streams based on insights (Machine Learning)
- **Cost Reduction – Materials:** Vendor Consolidation, Materials consolidation (Data Science & Analytics)
- **Cost Reduction – SG&A:** Sales territory consolidation, Retail property consolidation, shared service implementation (Data Science & Analytics)
- **Cost Reduction – Overhead:** Plant / property / equipment utilization improvements, lease consolidations, transportation consolidation (Machine-to-machine communication / IIoT, Analytics, Visualization)
- **Cost Reduction – Direct & indirect Labor:** Robotic process automation (RPA) and Chat-bots



Individual Exercise

1. Select 1 improvement opportunities (New Market Segments, Rationalized Product / Service Portfolio, Raw Material Cost Reduction, etc.)
2. Provide an example of where you have seen this approach implemented, and speculate about:
 - a) *What data was required?*
 - b) *What tools / techniques were likely utilized to process that data?*
 - c) *How were the types of results targeted? (Increased sales, lower cost, higher quality, faster time-to-market?)*
3. Present your work to the class

Key Differences

■ Industrial:

- *Supplementing physical product one-time sales with embedded software upgrades, product data collection, subscription to insights, and remote monitoring of product performance*
- *Shifting nature of product and service development and product support*



■ Retail:

- *Shift from “bricks to clicks” reducing capital exposure, shifting labor costs, shifting nature of sales / marketing means different skill sets for product and service developers*



■ Health Care:

- *Preoccupied with cyber security after recent hacks of Blue Cross / Blue Shield, others. Struggling with staffing availability, escalating cost structure*
- *Looking for automation opportunities. Also trying to drive rapid turnover of facility occupation*



■ Telecom:

- *Fiber backbone across North America, Europe – still growing in China*
- *Big news in the industry is 5G. Enabler of IoT and IIoT – multi-trillion-dollar demand in next couple of years. Current concern about security of Huawei as a provider for much of the 5G equipment.*
- *Big push to edge-based computing, including AI/Machine Learning. Industry shift from on-premises data centers to cloud-based operations along with demand for portability driving transformations in infrastructure to support data volumes, types*



■ Financial Services:

- *Ever-changing regulatory requirements*
- *Big news in this industry is crypto-currency – ranging from PayPal to Block Chain to the new Apple currency (Libra)*
- *Intense competition – everyone is lending money these days – leading to rapidly reconfiguring market space*



Key Similarities

- Moving to Cloud-based Operations
- Cybersecurity Challenges
- Information Protection & Privacy Challenges – Increasing Regulation



- Net Results:

- Digital transformation (IoT / IIoT)*
- Skill set requirements changing (Data Science, APIs, ML/AI, AR, BlockChain)
- Development methodology changing (Waterfall to Agile)
- Cybersecurity / data privacy at the heart of everything
- Automation offering opportunities to lower staffing cost, improve service speed, and improve consistency / quality (RPA)

Digital Transformation is the changes associated with **digital** technology application and integration into all aspects of human life and society. It is the move from the physical to **digital**.

Section #2

Business Finance

Industrial



Telecom Provider



Retail



Health Care Provider



Financial Service / Lender



Measuring Business Financial Performance: RONA & ROTC

■ RONA: Return on Net Assets

$$- \text{RONA} = \frac{\text{Pre-tax Earnings}}{\text{External Revenues}} \times \frac{\text{External Revenues}}{\text{Average Net Assets}}$$

■ ROTC: Return On Total Capital

$$- \text{ROTC} = \frac{\text{Net Operating Profit After Taxes}}{\text{Average Operating Capital}}$$

Working Definitions

- **Pretax earnings** is a company's **income** **after** all operating expenses, including interest and depreciation, have been deducted from total sales or revenues, but **before income taxes** have been subtracted. ... Also known as **pretax income** or **earnings before tax** (EBT).
- **External revenue** is income generated from activities **outside** of the company. It broadly encompasses all outside business activities, such as the sale of products or services.
- **Net assets** are total assets **minus** total liabilities of an individual or company.
- **Operating Profits** are **income** resulting from a firm's primary business. (Formula: Sales revenue - (cost of goods sold + operating expenses))
- **Operating Capital** is the **cash available** for day-to-day operations of an organization.

How Businesses Make Money



1. Build / sell hardware
 2. Build / sell and support hardware
 3. Build / sell hardware with embedded software
 4. Build / sell and support hardware with embedded software
 5. Build / sell software products & services
 6. Buy / inventory / sell products
 7. Buy / inventory / sell products and support services
 8. Pure service provider (such as health care)
 9. Primarily an Installer with some secondary product sales (HVAC, Telecom)
- An increasingly blurred set of lines between these business models!
- A. Campbell's Soup
 - B. Adobe
 - C. Stanley Tools
 - D. Levis
 - E. Inbev
 - F. General Motors – Chevrolet
 - G. Bank of America
 - H. Total Comfort Heating & AC
 - I. Boeing
 - J. Barnes Jewish Hospital
 - K. Best Buy
 - L. Tesla

The Two Components of Business Finance

Income Statement

Income Statement Illustration

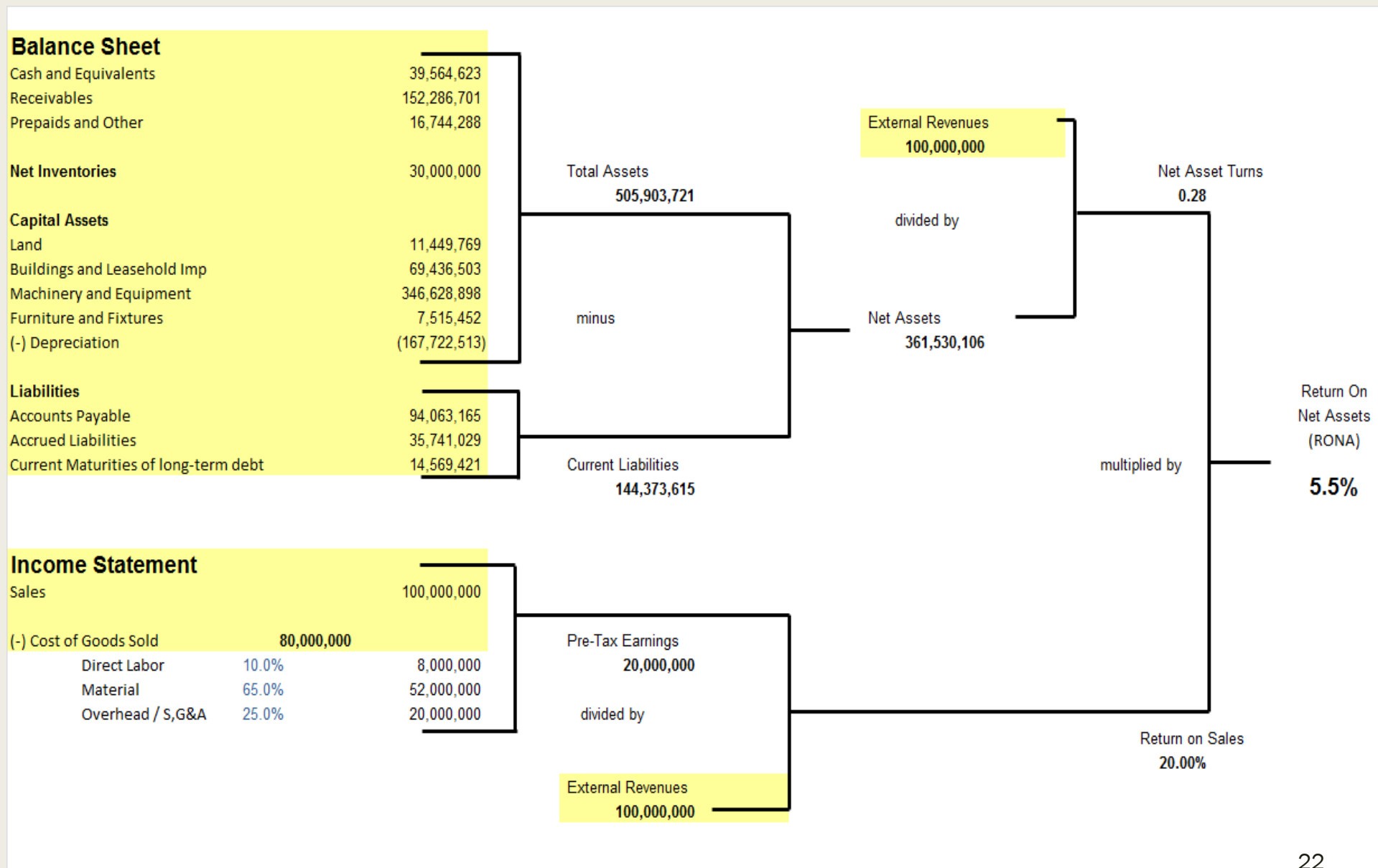
	(\$ millions)
Sales	
External Revenues	\$12,032
Interdivisional	\$852
Total Revenues	\$12,884
 Costs and Expenses	
Cost of Products & Services	\$10,474
Research & Development	\$336
General & Administrative	\$786
Cost of Goods Sold	\$11,596
 Pre-Tax Earnings	\$1,288

Balance Sheet

Balance Sheet Illustration

	(\$ millions)
Assets	
Cash	\$8
Accounts Receivable	\$740
Inventories	\$2,450
Property, Buildings & Equipment	\$1,590
Other Assets	\$56
Total Assets	\$4,842
 Liabilities	
Accounts Payable	\$632
Accrued Expenses	\$178
Advances and Billings in Excess of Related Costs	\$826
Employee Compensation	\$354
Total Liabilities	\$1,990
 Net Assets	\$2,852

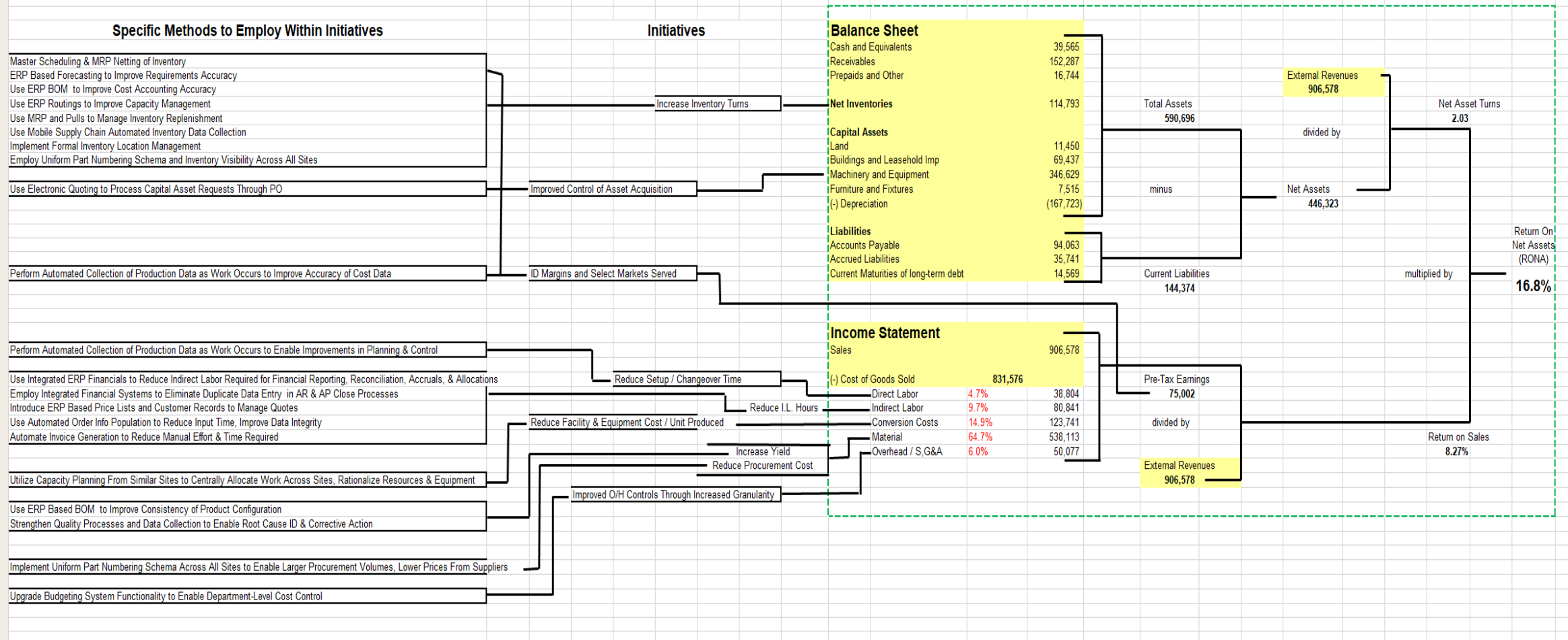
The DuPont Model



Before and After

BEFORE

As Things Stand Today....



Before and After

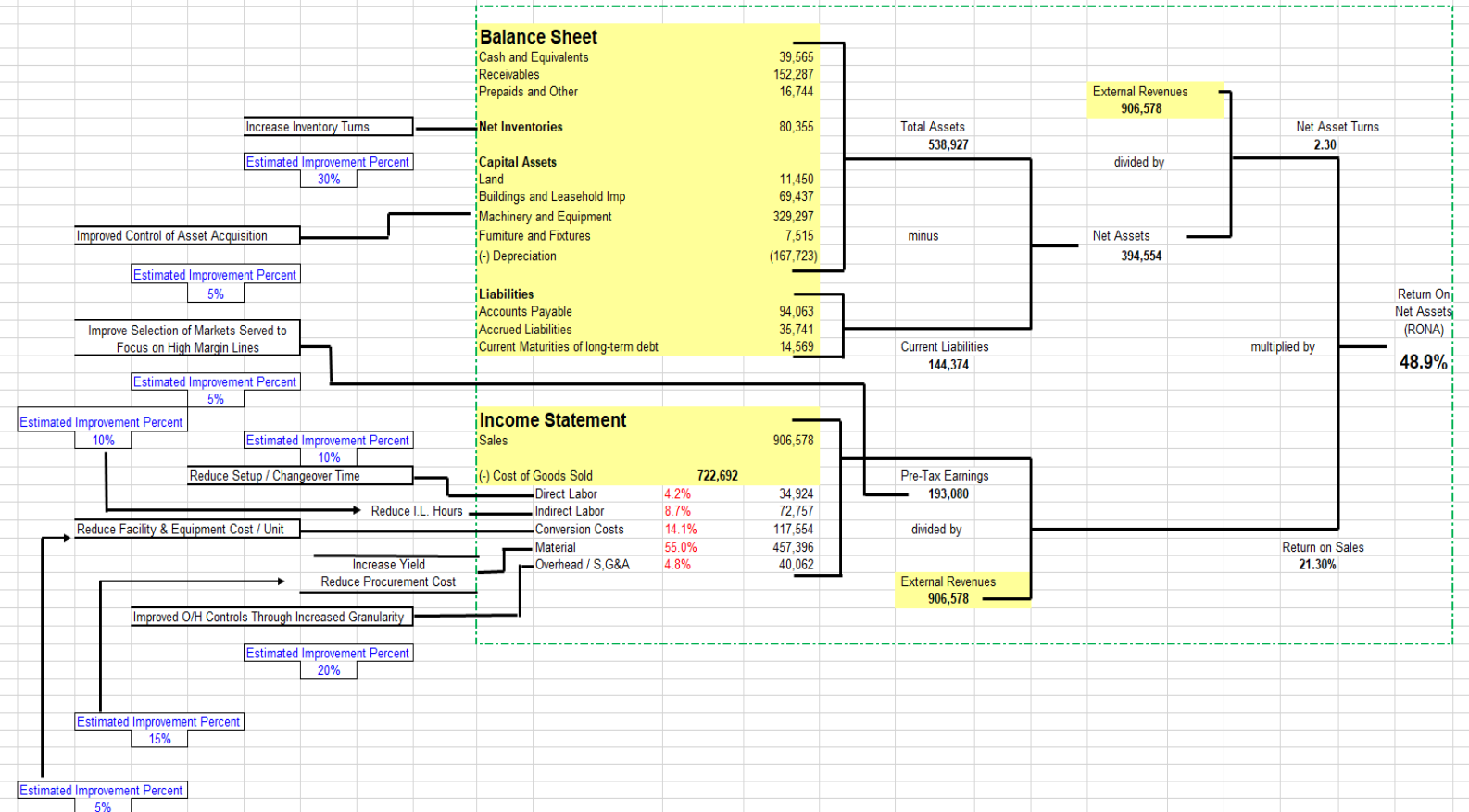
AFTER

After Improvements Are Implemented....

Assumptions:

1. Revenue Level Remains Unchanged (increased revenue would improve RONA)
2. Does not reflect any cost associated with making the listed improvements
3. Improvements reflect implementation across all sites

Baseline Data Showing Total Potential Improvements



Exercise:

- a) A 25% reduction in net inventory
- b) A 10% increase in sales
- c) A 15% reduction in material cost
- d) A 50% reduction in direct labor cost

Corporation Baseline Data	
Company Name	ABC Corporation
Industry	Technology
Market Segment	Software Development
Revenue (Q1)	\$1,200,000
Revenue (Q2)	\$1,350,000
Revenue (Q3)	\$1,400,000
Revenue (Q4)	\$1,500,000
Revenue (YTD)	\$5,450,000
Profit (Q1)	\$300,000
Profit (Q2)	\$330,000
Profit (Q3)	\$350,000
Profit (Q4)	\$375,000
Profit (YTD)	\$1,355,000
Market Share (%)	15.2
Customer Satisfaction	85%
Employee Count	250
Headquarters Location	New York, NY
Website	www.abc-corp.com
Primary Product Line	Cloud Solutions
Competitor A	XYZ Corp
Competitor B	DEF Inc
Competitor C	GHI Ltd
Competitor D	JKL Co
Competitor E	MNO LLC
Competitor F	PQR Corp
Competitor G	STU Inc
Competitor H	VWX Ltd
Competitor I	YZA Co
Competitor J	BCD LLC
Competitor K	EFG Corp
Competitor L	HIJ Inc
Competitor M	KLM Ltd
Competitor N	OPQ Co
Competitor O	RST LLC
Competitor P	UVW Corp
Competitor Q	XYZ Inc
Competitor R	ABC Ltd
Competitor S	DEF Co
Competitor T	GHI LLC
Competitor U	JKL Corp
Competitor V	MNO Inc
Competitor W	PQR Ltd
Competitor X	STU Co
Competitor Y	VWX LLC
Competitor Z	YZA Corp
Competitor AA	BCD Inc
Competitor AB	EFG Ltd
Competitor AC	HIJ Co
Competitor AD	KLM LLC
Competitor AE	OPQ Corp
Competitor AF	RST Inc
Competitor AG	UVW Ltd
Competitor AH	XYZ Co
Competitor AI	ABC LLC
Competitor AJ	DEF Corp
Competitor AK	GHI Inc
Competitor AL	JKL Ltd
Competitor AM	MNO Co
Competitor AN	PQR LLC
Competitor AO	STU Corp
Competitor AP	VWX Inc
Competitor AQ	YZA Ltd
Competitor AR	BCD Co
Competitor AS	EFG LLC
Competitor AT	HIJ Corp
Competitor AU	KLM Inc
Competitor AV	OPQ Ltd
Competitor AW	RST Co
Competitor AX	UVW LLC
Competitor AY	XYZ Corp
Competitor AZ	ABC Inc
Competitor BA	DEF Ltd
Competitor BB	GHI Co
Competitor BC	JKL LLC
Competitor BD	MNO Corp
Competitor BE	PQR Inc
Competitor BF	STU Ltd
Competitor BG	VWX Co
Competitor BH	YZA LLC
Competitor BI	BCD Corp
Competitor BJ	EFG Inc
Competitor BK	HIJ Ltd
Competitor BL	KLM Co
Competitor BM	OPQ LLC
Competitor BN	RST Corp
Competitor BO	UVW Inc
Competitor BP	XYZ Ltd
Competitor BQ	ABC Co
Competitor BR	DEF LLC
Competitor BS	GHI Corp
Competitor BT	JKL Inc
Competitor BU	MNO Ltd
Competitor BV	PQR Co
Competitor BW	STU LLC
Competitor BX	VWX Corp
Competitor BY	YZA Inc
Competitor BZ	BCD Ltd
Competitor CA	EFG Co
Competitor CB	HIJ LLC
Competitor CC	KLM Corp
Competitor CD	OPQ Inc
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Competitor CF	UVW Co
Competitor CG	XYZ LLC
Competitor CH	ABC Corp
Competitor CI	DEF Inc
Competitor CJ	GHI Ltd
Competitor CK	JKL Co
Competitor CL	MNO LLC
Competitor CM	PQR Corp
Competitor CN	STU Inc
Competitor CO	VWX Ltd
Competitor CP	YZA Co
Competitor CQ	BCD LLC
Competitor CR	EFG Corp
Competitor CS	HIJ Inc
Competitor CT	KLM Ltd
Competitor CU	OPQ Co
Competitor CV	RST LLC
Competitor CW	UVW Corp
Competitor CX	XYZ Inc
Competitor CY	ABC Ltd
Competitor CZ	DEF Co
Competitor DA	GHI LLC
Competitor DB	JKL Corp
Competitor DC	MNO Inc
Competitor DD	PQR Ltd
Competitor DE	STU Co
Competitor DF	VWX LLC
Competitor DG	YZA Corp
Competitor DH	BCD Inc
Competitor DI	EFG Ltd
Competitor DJ	HIJ Co
Competitor DK	KLM LLC
Competitor DL	OPQ Corp
Competitor DM	RST Inc
Competitor DN	UVW Ltd
Competitor DO	XYZ Co
Competitor DP	ABC LLC
Competitor DQ	DEF Corp
Competitor DR	GHI Inc
Competitor DS	JKL Ltd
Competitor DT	MNO Co
Competitor DU	PQR LLC
Competitor DV	STU Corp
Competitor DW	VWX Inc
Competitor DX	YZA Ltd
Competitor DY	BCD Co
Competitor DZ	EFG LLC
Competitor EA	HIJ Corp
Competitor EB	KLM Inc
Competitor EC	OPQ Ltd
Competitor ED	RST Co
Competitor EE	UVW LLC
Competitor EF	XYZ Corp
Competitor EG	ABC Inc
Competitor EH	DEF Ltd
Competitor EI	GHI Co
Competitor EJ	JKL LLC
Competitor EK	MNO Corp
Competitor EL	PQR Inc
Competitor EM	STU Ltd
Competitor EN	VWX Co
Competitor EO	

	Return On Net Assets (RONA)		
-	16.8%		



IT and Our Impact on Profitability

- Typical IT Spend as a % of Sales*:
 - *Industrial:* 1.4% to 3.2%
 - *Financial Services:* 4.4% to 11.4%
 - *Telecom:* 2.6% to 4.7%
 - *Health Care:* 3.0% to 5.9%

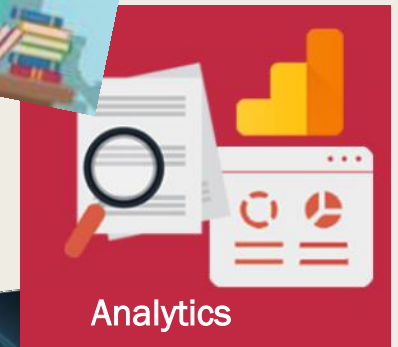
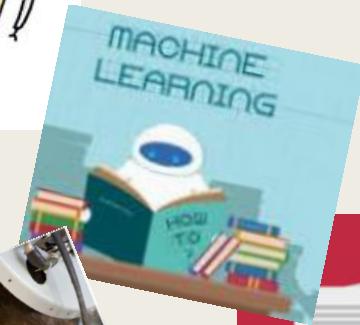
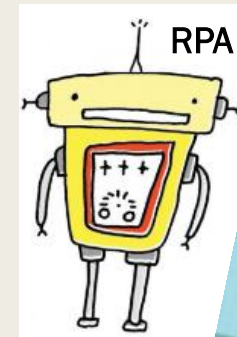


What happens if
I completely
eliminate IT
spending?

What happens if I
spend 50% more
on IT to get a 10%
savings in
materials cost?

New Ways to Use IT to Improve Profitability

1. Robotic Process Automation (RPA)
2. Apply Machine Learning (ML) to existing databases
3. Apply Machine Learning (ML) in IIoT Operations
4. Build analytics into new IoT products / services
5. Apply Augmented Reality in training scenarios
6. Apply Augmented Reality in work instructions
7. Apply Block Chain to Logistics Management



Team Based Exercise

1. Divide into 4 teams (Industrial, Telecom, Health Care Services, Financial Lender)
2. Review the background of your client's type of company
3. Identify 2 biggest opportunities for IT related improvement
4. Develop at least 1 approach for each opportunity:
 - a) *What data do you need?*
 - b) *What tools / techniques will you apply?*
 - c) *What will the deliverable(s) of your work be?*
 - d) *How will the results impact profitability / company success?*
5. Present your work to the class