

# What's the Opportunity?

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# Buzz about Big Data and Analytics

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From 2013 to 2020, the digital universe will grow by a factor of 10—from 4.4 trillion gigabytes to 44 trillion. It more than doubles every two years.

—“The Digital Universe of Opportunities,” IDC report, April 2014

# Buzz about Big Data and Analytics

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- Companies in the top third of their industry in the use of data-driven decision making are on average
  - 5% more productive
  - 6% more profitablethan their competitors.

—“The Big Data Management Revolution,”  
*Harvard Business Review*, 2012

# Buzz about Big Data and Analytics

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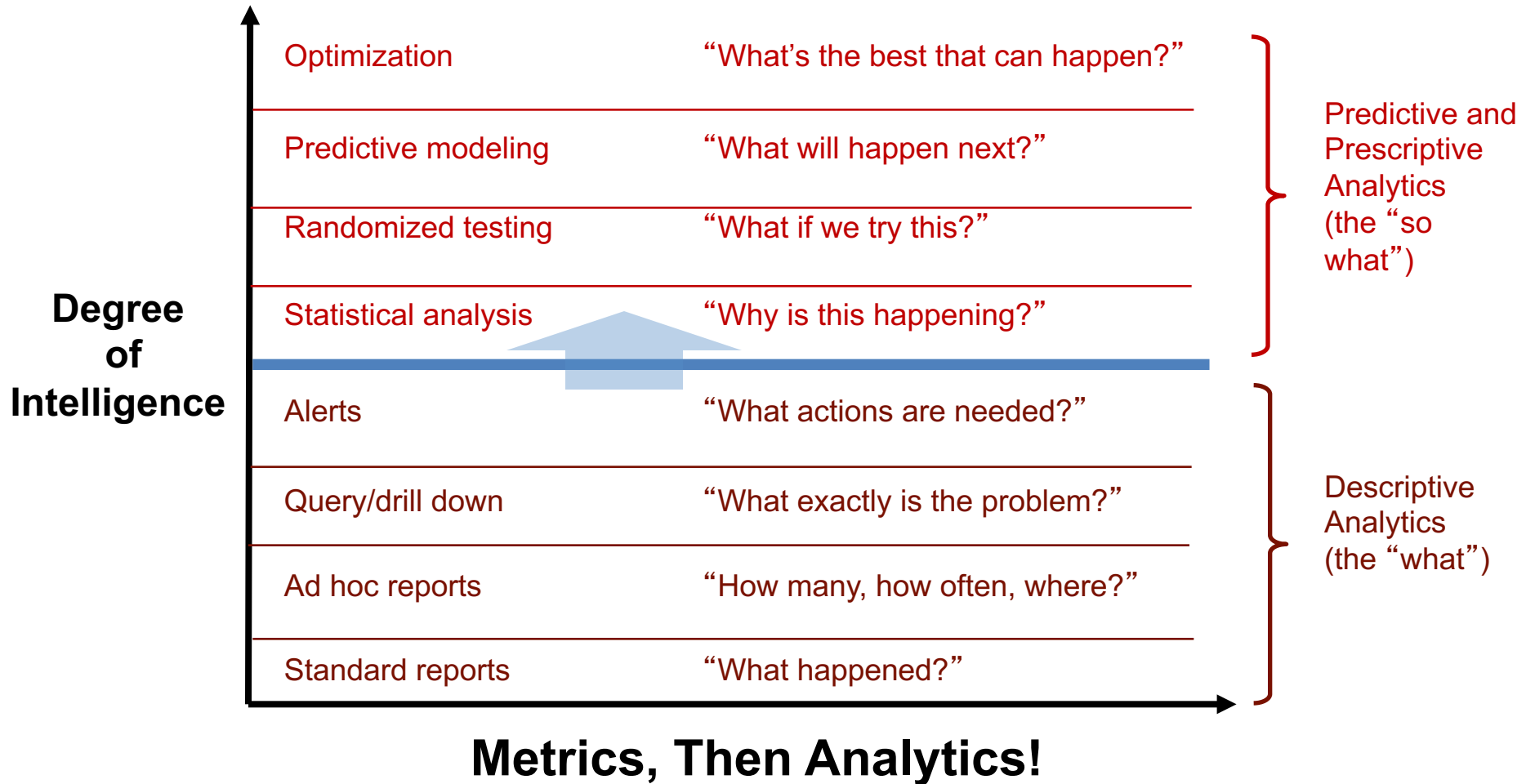
*“McKinsey & Co. analysts . . . showed a typical range of 15% to 20% of marketing budgets could be reinvested in other activities or returned to the bottom line without losing marketing ROI . . . **\$200 billion** of marketing spent annually could be put to better use.”*

# Buzz about Big Data and Analytics

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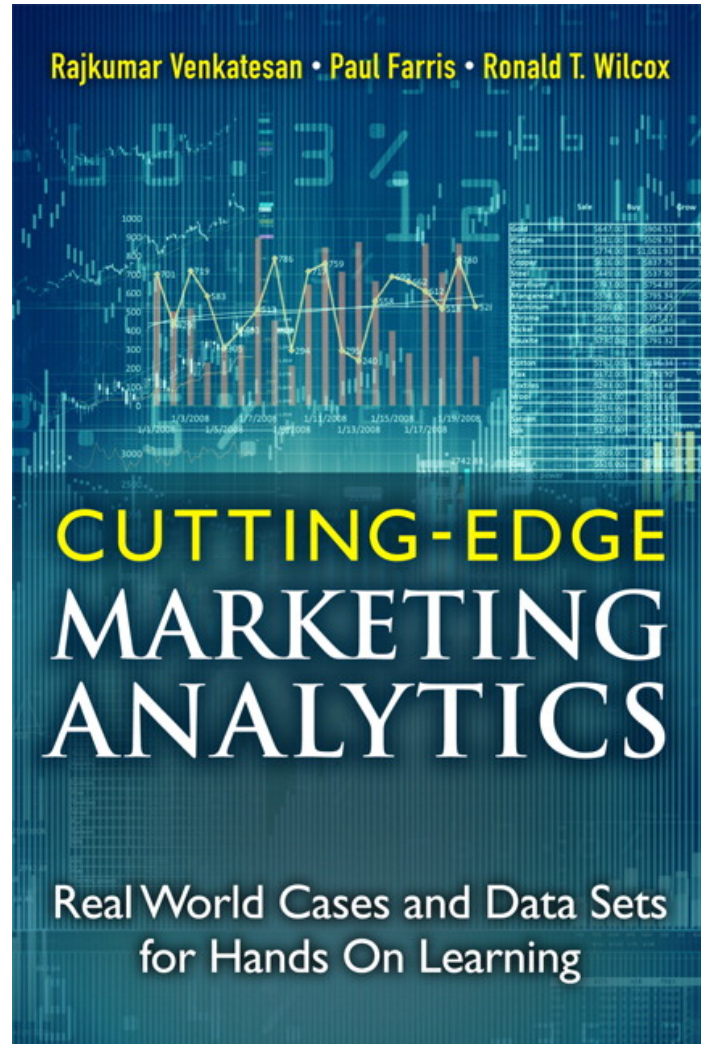
High Performers		Low Performers
65%	have significant decision-support/analytical capabilities	23%
36%	value analytical insights to a very large extent	8%
77%	have above-average analytical capability within industry	33%
73%	make decisions based on data and analysis	51%
40%	use analytics across their entire organization	23%

# Marketing Analytics?



# Resources on Marketing Analytics

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Resource videos and datasets at  
<http://dmanalytics.org>

# Moneyball Example

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Billy Bean  
Oakland A's General Manager, 2002

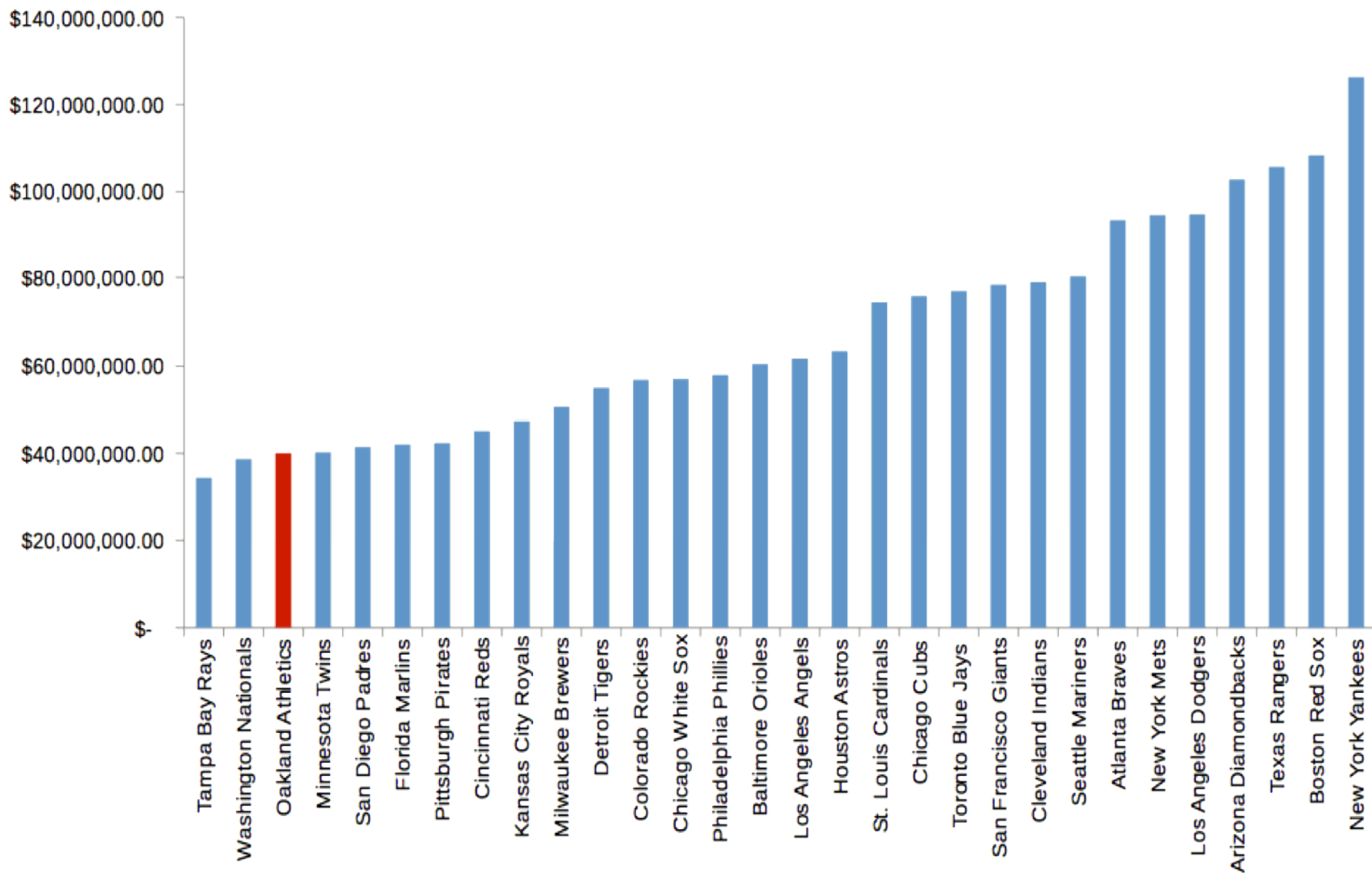


**Paul DePodesta**  
**Assistant to General Manager, Oakland A's, 2002**



# Moneyball Year (2002)

## MLB Team Salaries



# Cash Still Buys Wins

Win percentage vs. standard deviations from average salary, through July 1, 2015



# 2002 MLB Playoff Teams

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- New York Yankees
- Anaheim
- **Oakland**
- Minnesota
- Atlanta
- San Francisco
- Arizona
- St. Louis

## FREE AGENTS

DYE RF

GIAMBI 1B

DAMON CF

ISRINGHAUSEN RHP



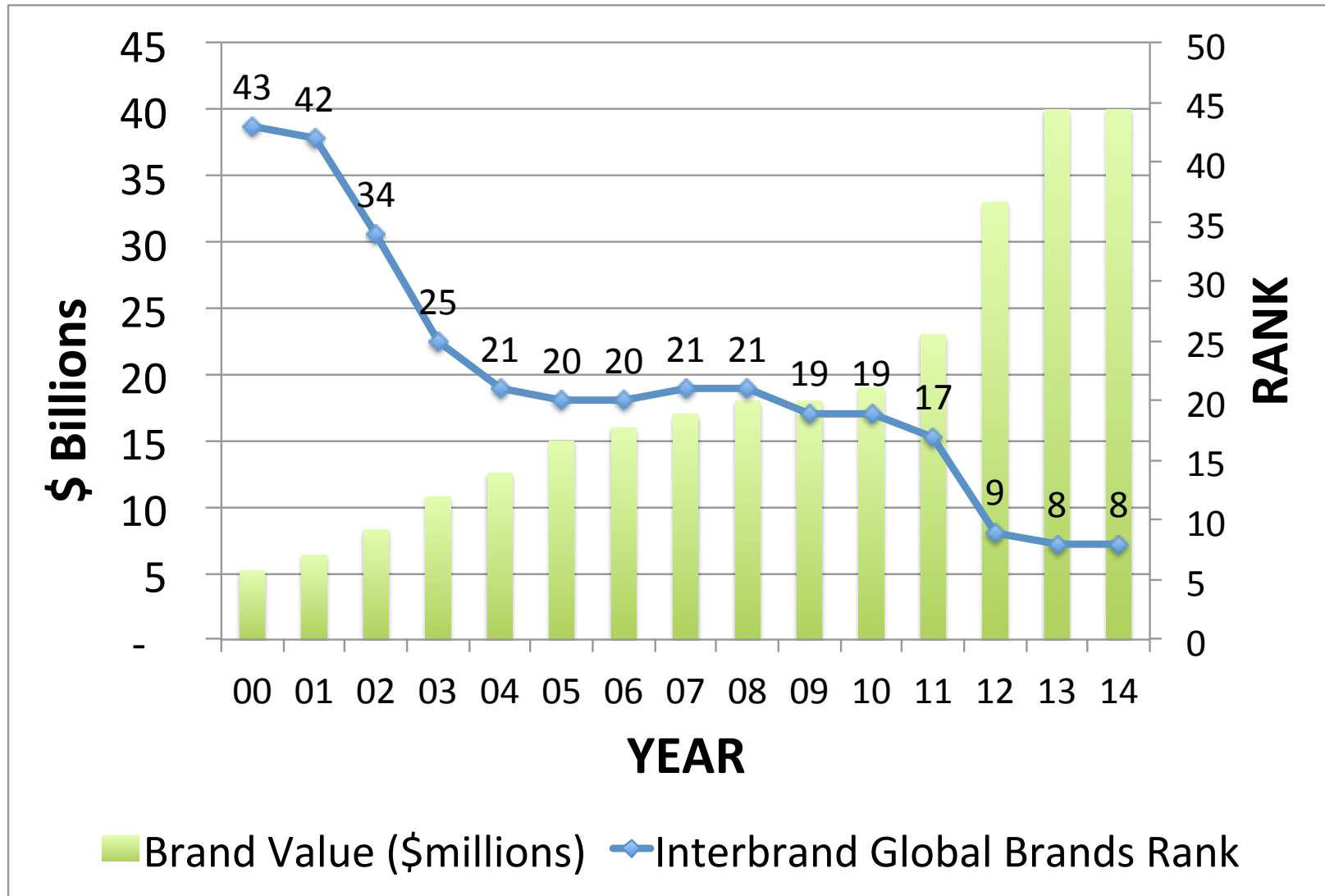




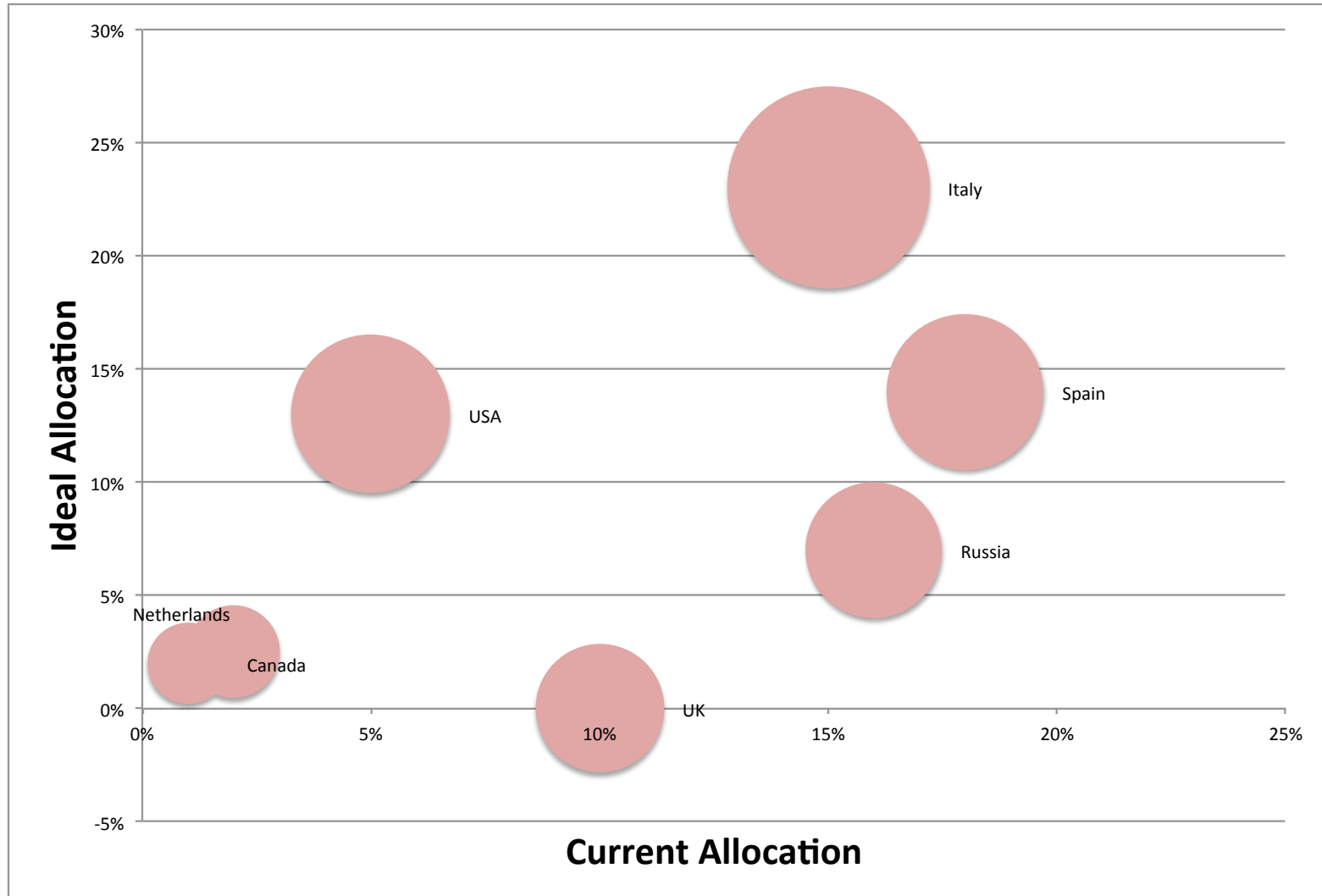
# Samsung Example

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# The Samsung Brand Value Growth



# Optimal Marketing: Misallocations Revealed



Source: Adapted from Quelch, John A., and Anna Harrington. ["Samsung Electronics Company: Global Marketing Strategy"](#). *Journal of International Business Studies*, 2004, 35(1), 1-14. (Downloaded from JIBS on 08/10/2024)

# Resource Allocation Process

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# Resource Allocation Process

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- Determine the performance metric?
  - Market share, profits, customer lifetime value, etc.
- Map a system of metrics framework connecting marketing inputs to the performance metric
- Build a econometric (regression) model for the unknown values in the system of metrics framework
  - The regression model will be a function of marketing inputs of interest, e.g., price, advertising, sales calls, etc.

# Resource Allocation Process

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- Once the regression model is obtained, predict the performance metric using the regression function
- Identify the optimal value of the marketing input that maximizes the performance metric
  - Hint: Solver
  - Hint: Regression function connects marketing inputs to the components of the performance metric

# System of Metrics for Net Profit

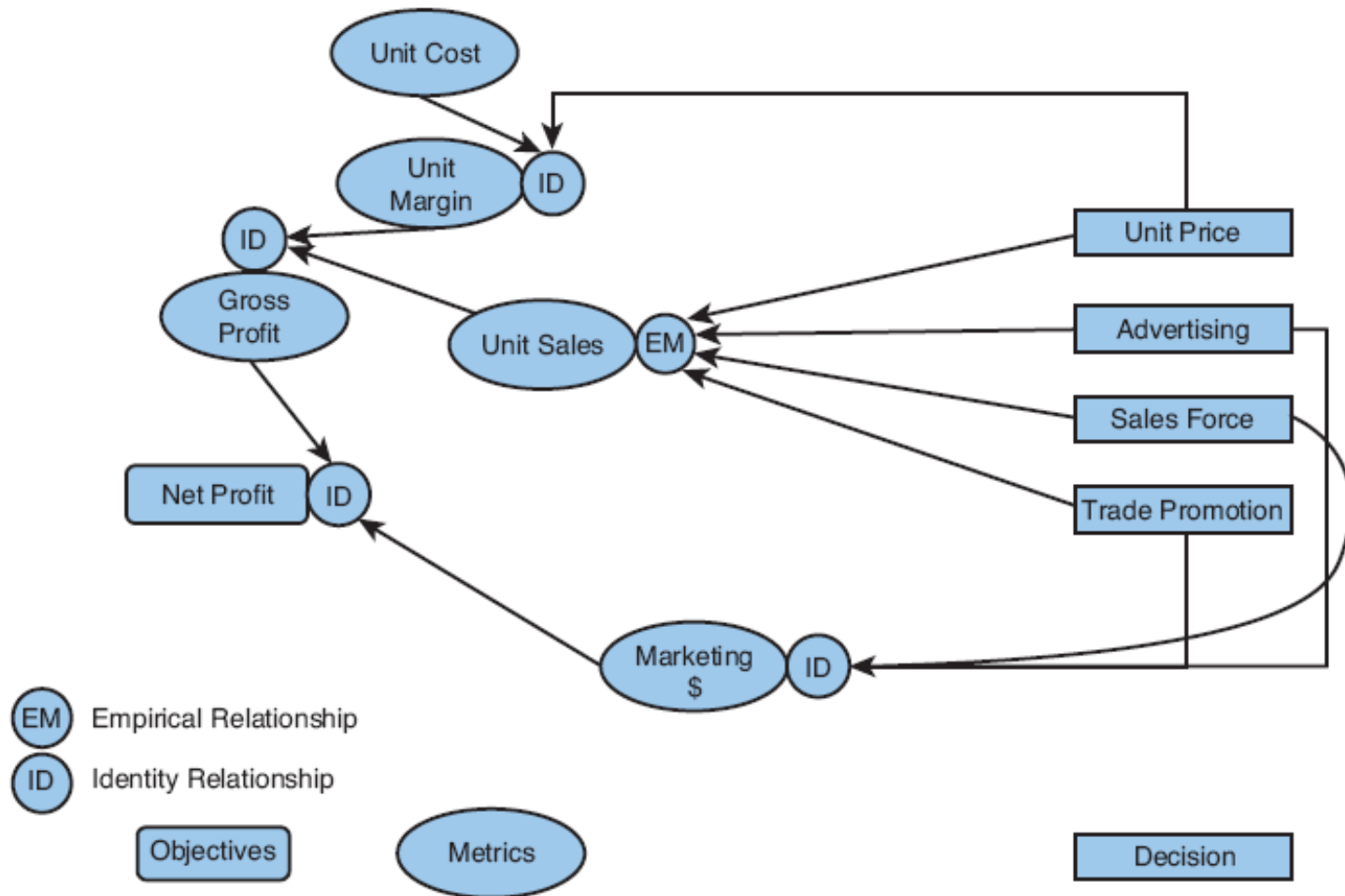


Figure 12.4 Empirical Relationship with Components of Marketing Outcomes

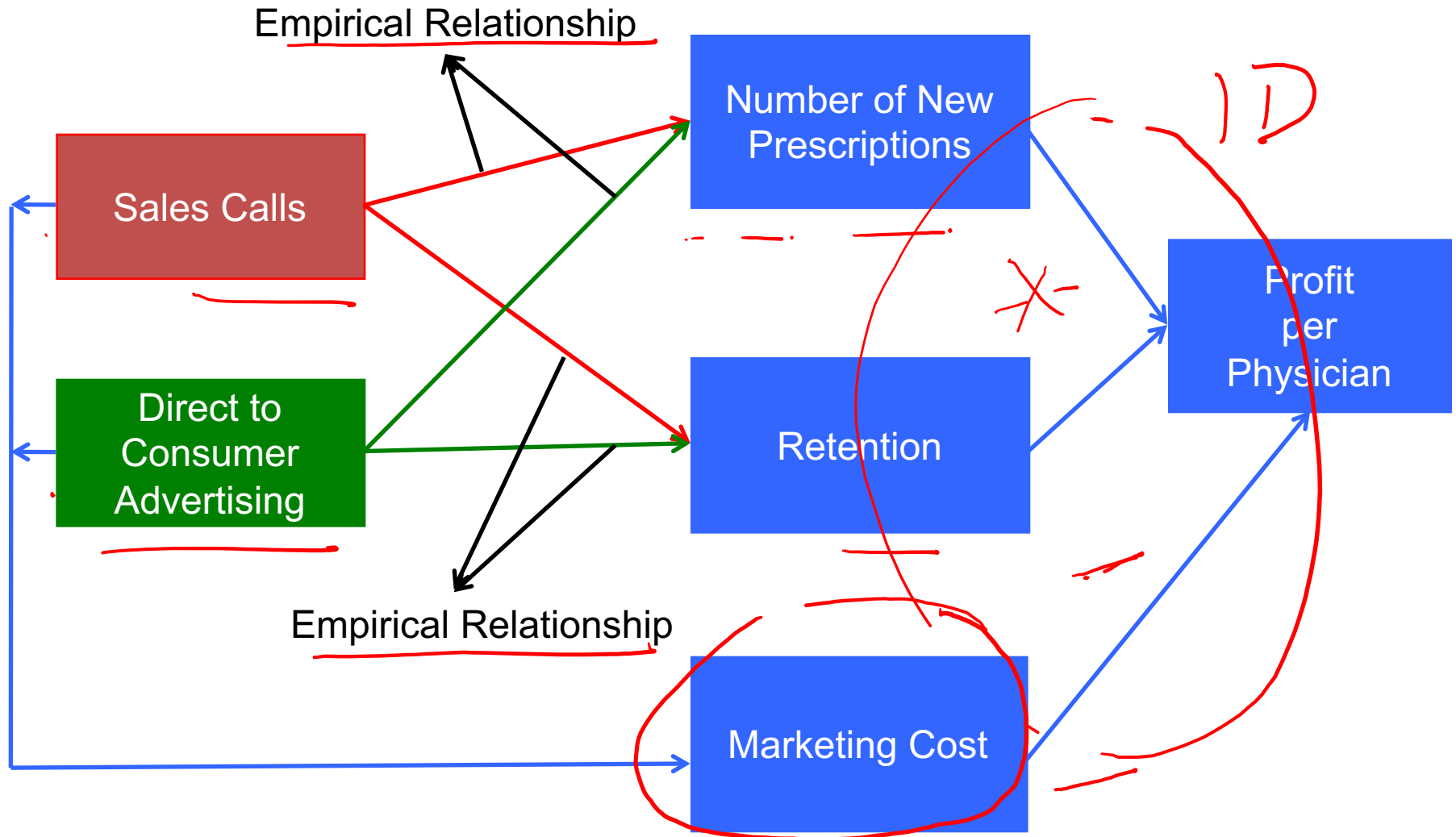
What is an empirical relationship?



# Pfizer

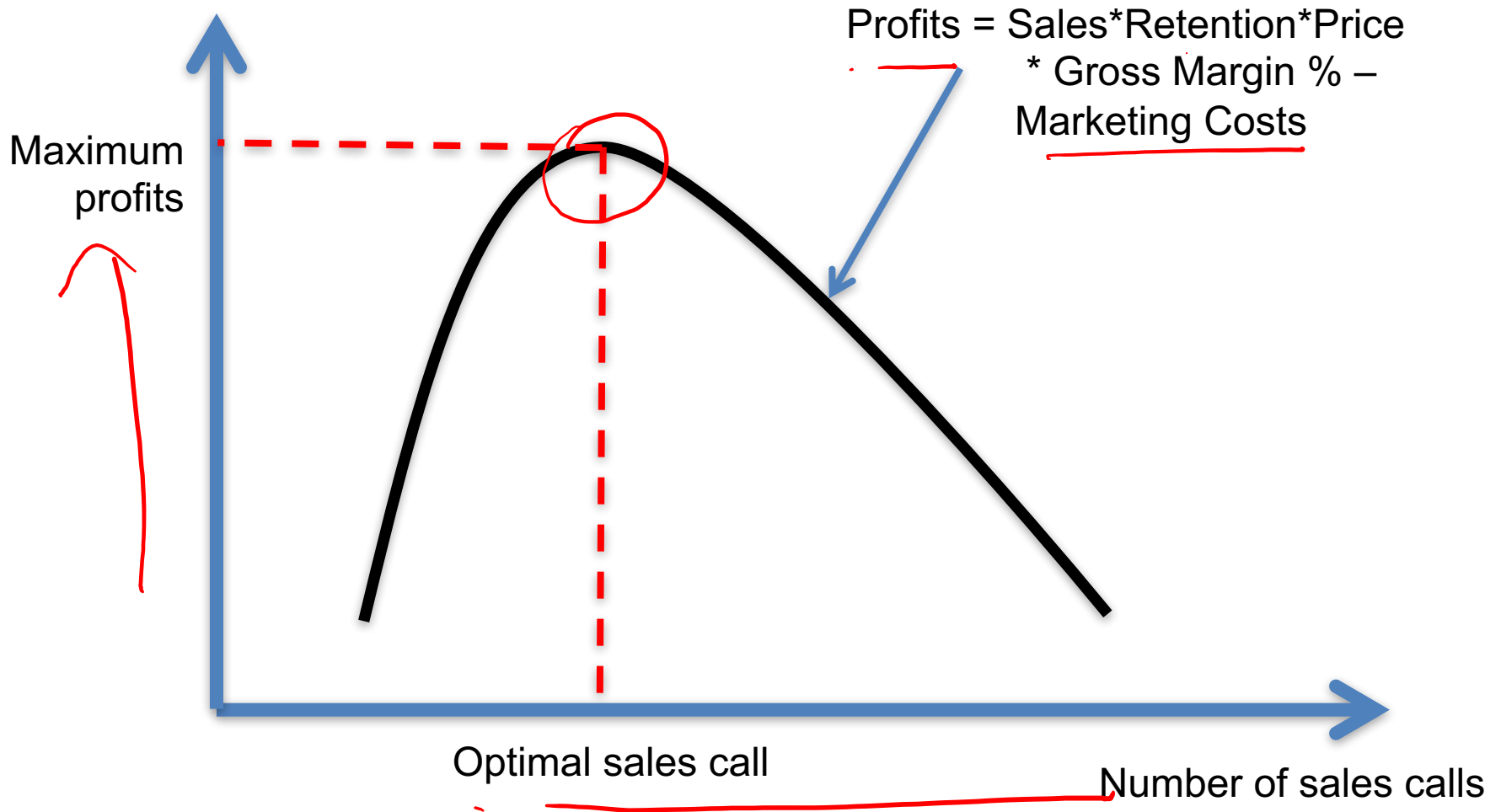
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# Resource Allocation Process—Pfizer



# Maximizing Profits and Optimizing Marketing—Pfizer

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# Maximizing Sales and Optimizing Sales Calls—Pfizer

*Regression*

*logit*

Estimated Weights				Price	Cost of Sales Calls
Number of prescriptions		Retention			
Intercept	Sales Calls	Intercept	Sales Calls		
0.05	1.5	0.006	1.2	300	50

Sales Calls	Sales	Retention	Profit	
1	1.09	0.70	109.73	
2	1.70	0.79	181.65	Current
3	2.13	0.84	226.31	
4	2.46	0.87	252.30	
5	2.74	0.90	265.25	
6	2.97	0.91	268.74	Optimal
7	3.17	0.92	265.10	
8	3.35	0.93	255.94	
9	3.50	0.94	242.39	
10	3.65	0.95	225.27	

*= Sales + Retention \**

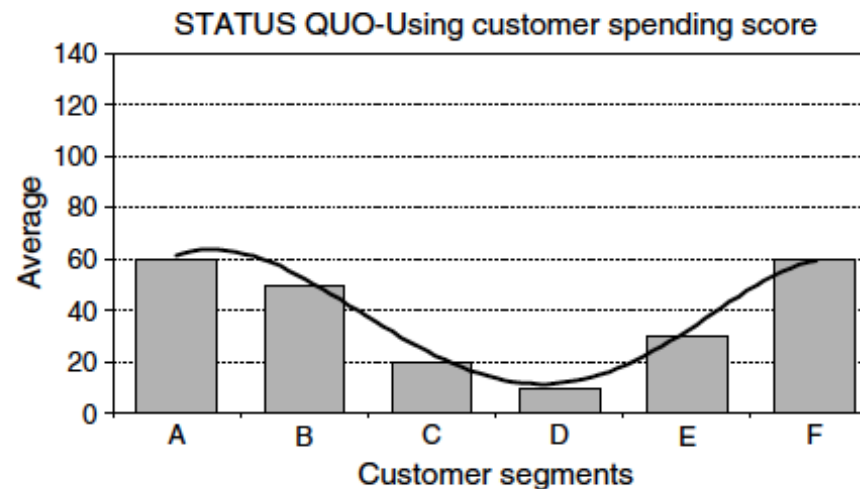
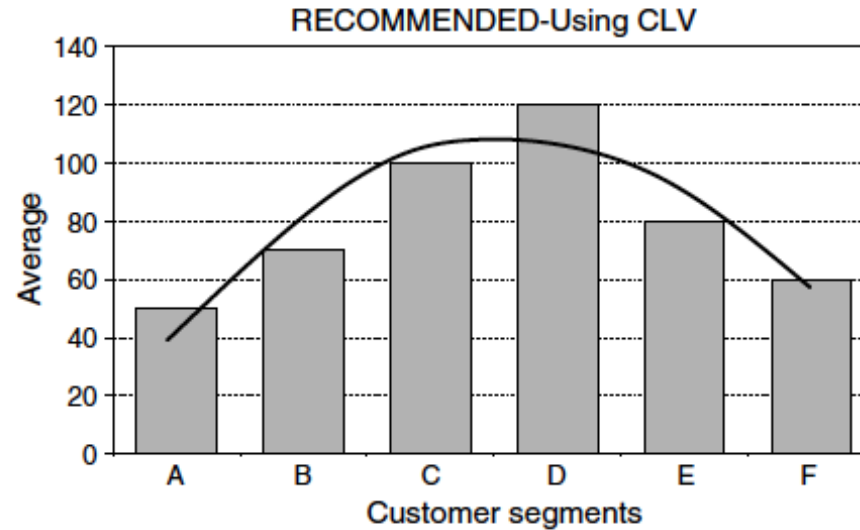
*(180k margin)  
\* price  
- cost of sales calls*

# Optimizing Sales

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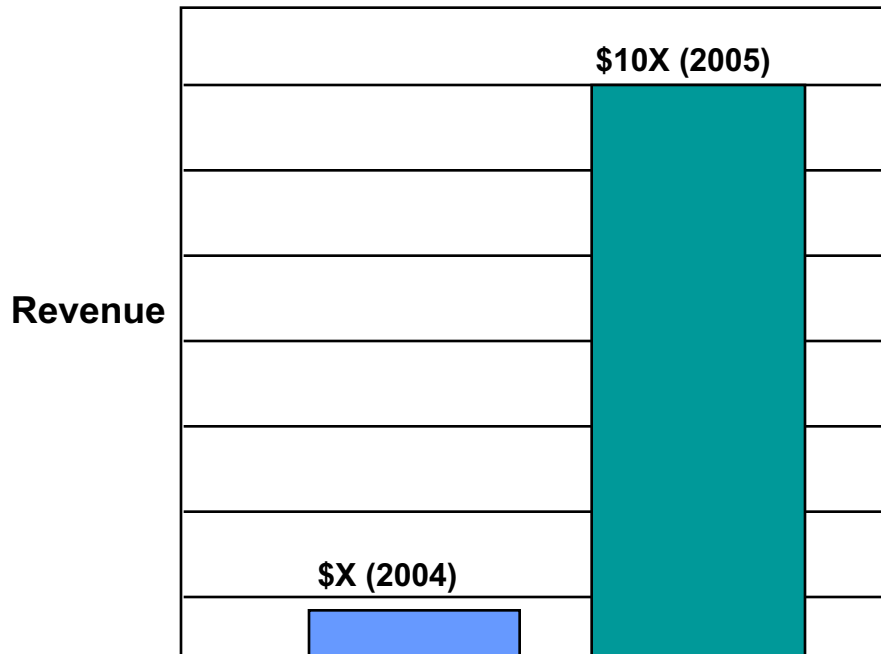
# Optimizing Sales Force at IBM

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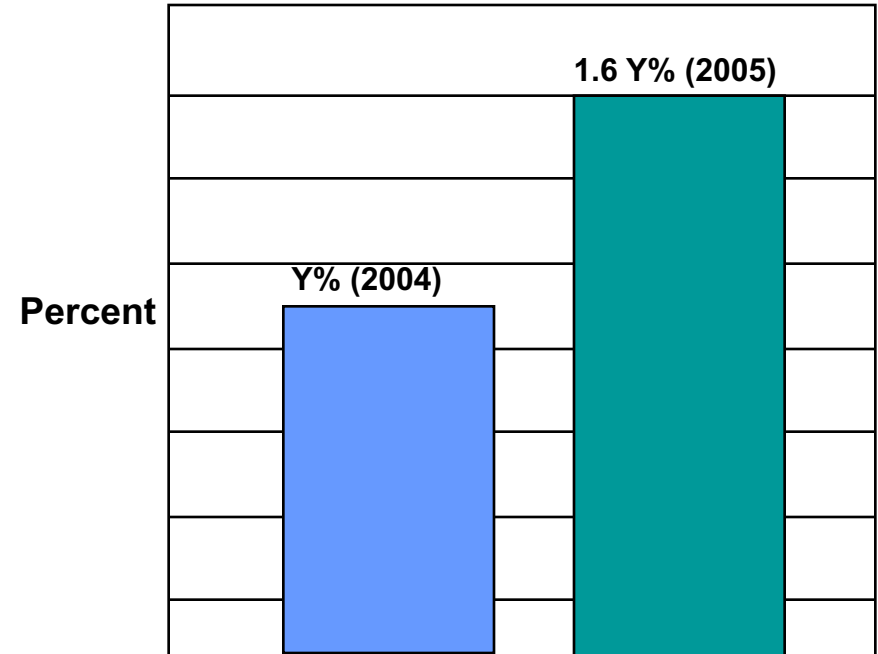


# Outcomes of Optimizing Sales Force at IBM

Average Revenue/Customer  
(for the same group of customers)



Percent of Establishments  
with Purchase



■ "No Sales Call until 2004"

■ "Sales Calls in 2005"

**Incremental revenue attributed to net new accounts targeted by sales force using customer profit model recommendations = \$19.2 million**

# Marketing ROI

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*“Half the money I spend on advertising is wasted; the trouble is I don’t know which half.”*

John Wanamaker

Father of Modern Advertising

# ROI

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$$\text{Financial ROI} = \frac{\text{Profit}}{\text{Value of Investment}}$$

$$\text{Return on Marketing Investment (MROI)} = \frac{\text{Incremental Gross Margin f/Mktg} - \text{Marketing Investment}}{\text{Marketing Investment}}$$

# Marketing ROI (or ROMI)

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- The arithmetic is easy
- The estimation and definition of effects are not
- The same term (ROI) can be used to describe a multitude of methods

# Common Scenarios for ROI

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- Nine West shoes customized product listing ads on Google to individual products and devices (especially mobile) with the help of RKG Group
- Nine West product listing ads registered **ten times higher conversion rates** than nonbranded keywords on Google AdWords



# Common Scenarios for ROI Calculations

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- A chief marketing officer (CMO) wishes to convince the chief financial officer (CFO) that long-term returns to customer acquisition spending will be justified.
  - Customer lifetime value-based ROI will be useful but may not tell the full story of marketing productivity and costs

# Return on Investment

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# Return on Investment (ROI)

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Powerful Power Tools spends \$2 million for search engine marketing in 2012, generates \$10 million in incremental sales in 2012 with contribution margins of 50%.

$$\begin{aligned}\text{ROI} &= (\$10\text{M} * 50\% - \$2\text{M}) / \$2\text{M} \\ &= (\$5\text{M} - \$2\text{M}) / \$2\text{M} \\ &= \$3\text{M} / \$2\text{M} \\ &= \underline{\underline{150\%}}\end{aligned}$$



**As a marketing manager (or CFO), what questions might you ask?**

# What Questions Do You Ask?

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Powerful Power Tools spends \$2 million for search engine marketing in 2012, generates \$10 million in incremental sales in 2012 with contribution margins of 50%. **ROI = 150%**

- Will the investment in 2012 pay dividends in 2013 also?
  - What is the **carryover** of marketing investments? Should some new customer acquisitions in 2013 be attributed to the investment in 2012?
- How was incremental gross margin determined? What is the **baseline** without the search engine marketing?



# What Questions Do You Ask?

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Powerful Power Tools spends \$2 million for search engine marketing in 2012, generates \$10 million in incremental sales in 2012 with contribution margins of 50%. **ROI = 150%**

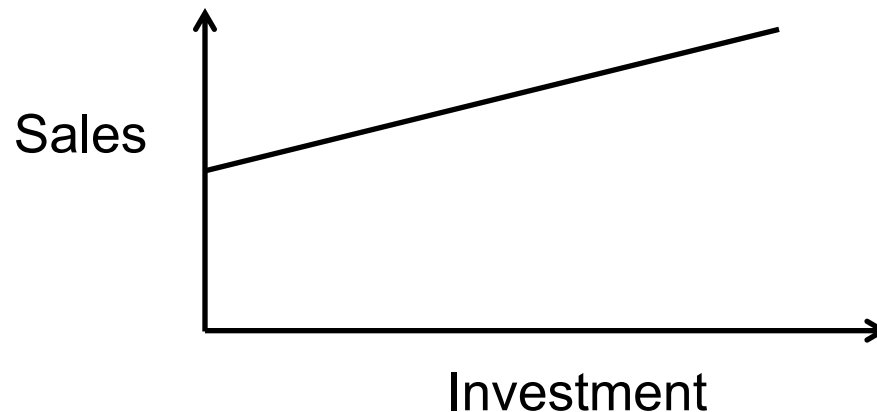
- Will doubling the investment to \$4 million double the returns to \$20 million in incremental sales?
  - Are there **diminishing returns** to marketing?
- What are the longer-term effects?
  - How many new customers did this campaign acquire in 2012, and what is the lifetime value of these new customers?

# Are There Diminishing Returns to Marketing?

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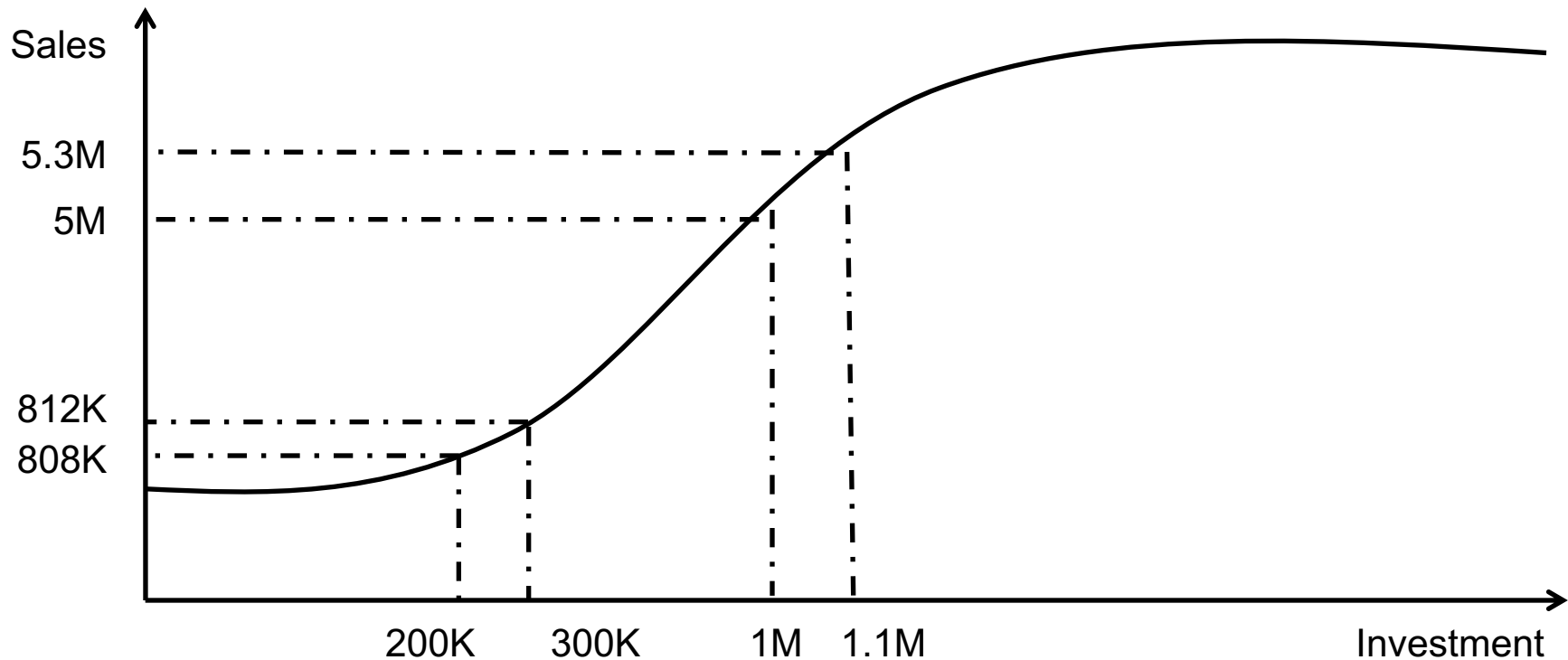
A CFO is interested in how the total returns to marketing spending have changed over the last two years since the new CMO was hired. Average ROI is the right measure to use.

***For linear models, average and incremental returns are the same.***



# Are There Diminishing Returns to Marketing?

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***In the presence of diminishing returns, the current level of investment matters when calculating incremental returns.***