Marketing Analytics II

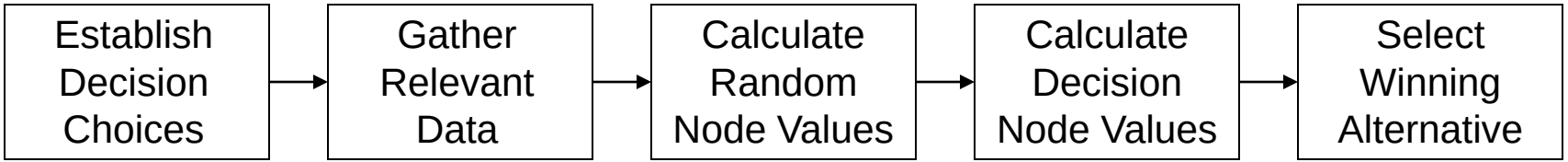
Chapter 7B: Product Analytics: Decision Trees

Stephan Sorger
www.stephansorger.com

Outline/ Learning Objectives

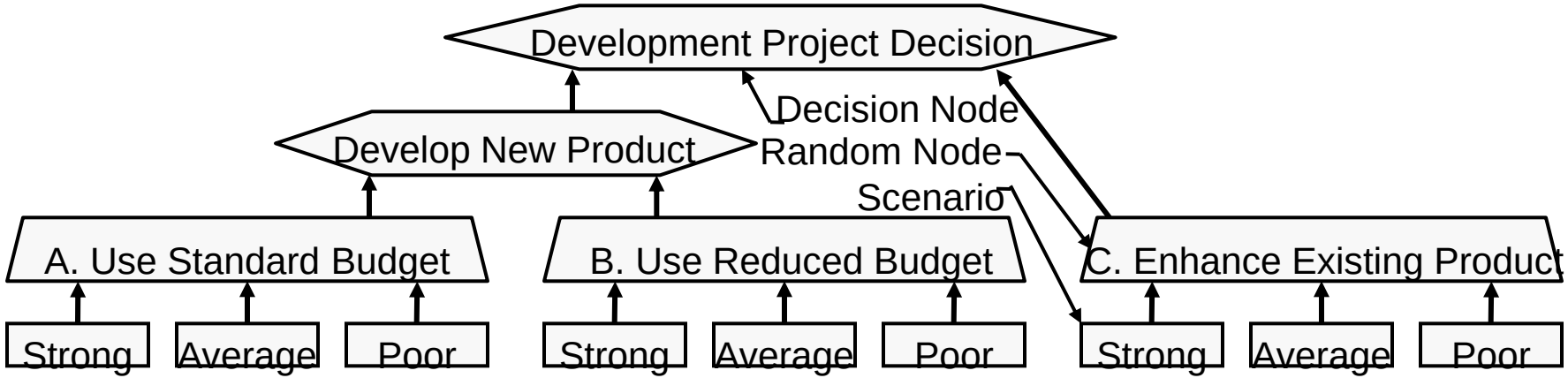
Topic	Description
Decision Tree Models	Select among multiple product development projects
Portfolio Allocation	Decide in which product/service to place investments
Product/Service Metrics	Track success of products and services

Decision Tree Models



Topic	Description
Decision Choices	List out alternatives
Relevant Data	Gather data for each alternative
Random Node Values	Calculate values at random nodes
Decision Node Values	Calculate values at decision nodes Uses results from random node calculations
Winning Alternative	Select alternative with highest net expected value

Decision Tree Models



Typical Development Project Selection Scenario

Alternative	Description
A. New Product, Standard Budget	Develop new product using standard development budget
B. New Product, Reduced Budget	Develop new product using reduced budget to cut costs
C. Existing Product, New Features	Enhance existing product with new features

Step 1: Establish Decision Choices

Decision Tree Models

Scenario	Probability	Potential Revenue
Strong market adoption	0.3	$800,000
Average market adoption	0.4	$200,000
Poor market adoption	0.3	$20,000
(Total probability for all scenarios)	*1.0*	*N/A*

Step 2: Gather Relevant Data: Choice 1, Standard Budget

Scenario	Probability	Potential Revenue
Strong market adoption	0.1	$800,000
Average market adoption	0.3	$200,000
Poor market adoption	0.6	$20,000

Step 2: Gather Relevant Data: Choice 2, Reduced Budget

Decision Tree Models

Scenario	Probability	Potential Revenue
Strong market adoption	0.2	$200,000
Average market adoption	0.5	$40,000
Poor market adoption	0.3	$10,000

Step 2: Gather Relevant Data: Choice 3, Develop Existing Product

Development Project Type	Costs
New product, standard budget	$200,000
New product, reduced budget	$100,000
Enhanced existing product	$40,000

Step 2: Gather Relevant Data: Costs for Each Alternative

Decision Tree Models

Scenario	Probability	Potential Revenue	Expected Value
Strong market adoption	0.3	$800,000	0.3 x 800,000 = $240,000
Average market adoption	0.4	$200,000	0.4 x $200,000 = $80,000
Poor market adoption	0.3	$20,000	0.3 x $20,000 = $6,000
Total			**$326,000**

Step 3: Random Node Value: Alternative 1: New Product, Standard Budget

Decision Tree Models

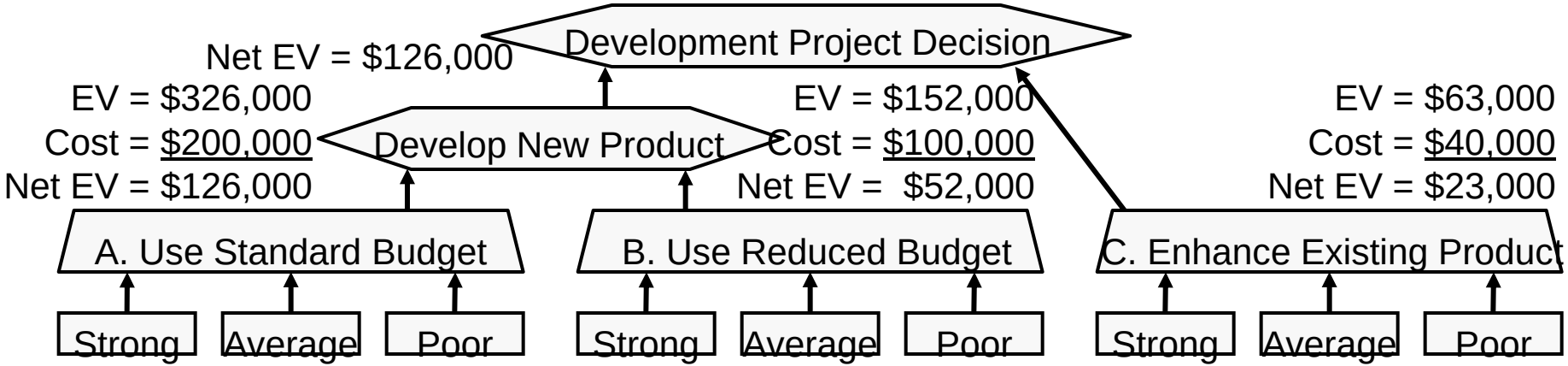
Scenario	Probability	Potential Revenue	Expected Value
Strong market adoption	0.1	$800,000	0.1 x $800,000 = $80,000
Average market adoption	0.3	$200,000	0.3 x $200,000 = $60,000
Poor market adoption	0.6	$20,000	0.6 x $20,000 = $12,000
Total			*$152,000*

Step 3: Random Node Value: Alternative 2: New Product, Reduced Budget

Scenario	Probability	Potential Revenue	Expected Value
Strong market adoption	0.2	$200,000	0.2 * $200,000 = $40,000
Average market adoption	0.5	$40,000	0.5 * $40,000 = $20,000
Poor market adoption	0.3	$10,000	0.3 * $10,000 = $3,000
Total			*$63,000*

Step 3: Random Node Value: Alternative 3: Enhance Existing Product

Decision Tree Models



Step 4: Calculating Decision Node Values

Step 5: Select Alternative with Highest Net Expected Value

Winner: “Develop New Product, Standard budget”

BCG Matrix: Product Portfolio Allocation

Product	Market Growth Rate	Relative Market Share	Status → Allocation
Product A	High	High	Star → Invest
Product B	Low	Low	Dog → Divest
Product C	Low	High	Cash Cow → Harvest
Product D	High	Low	Question Mark → Evaluate

Product	Market Growth Rate	Relative Market Share	Status → Allocation
Product A	12%	2.0	Star → Invest
Product B	1%	0.2	Dog → Divest
Product C	5%	2.0	Cash Cow → Harvest
Product D	10%	0.2	Question Mark → Evaluate

Product/Service Metrics

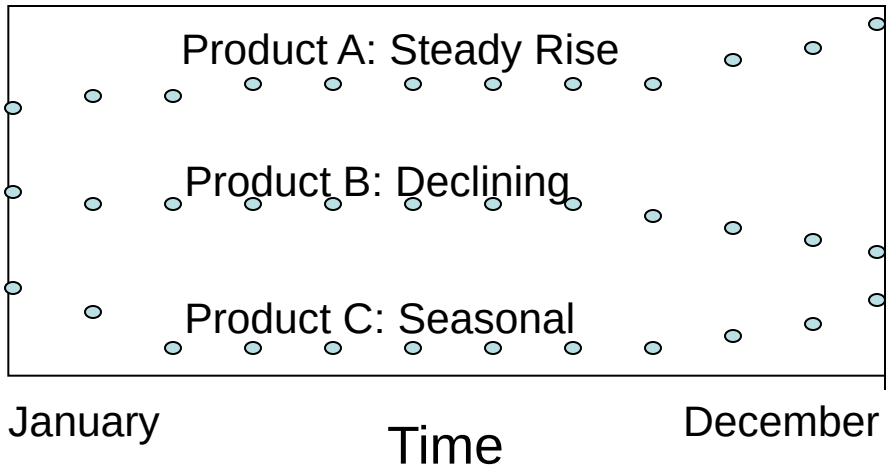
Product/ Service	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Product/Service A												
Product/Service B												
Product/Service C												

Product/ Service Sales Input Table:
Total Revenue by Month, Products A, B, and C

Product A: Market	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Market 1												
Market 2												
Market 3												

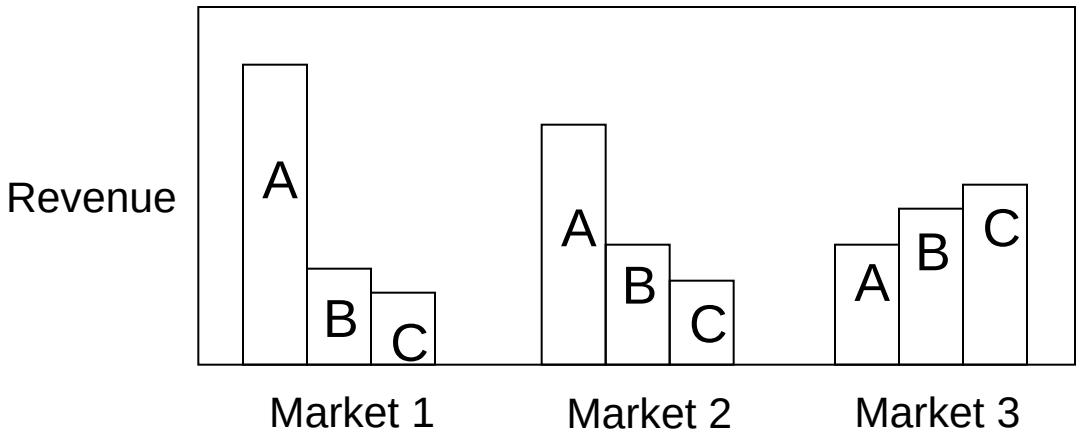
Product/ Service Sales Input Table:
Revenue in Different Markets by Month, Product A

Product/Service Metrics



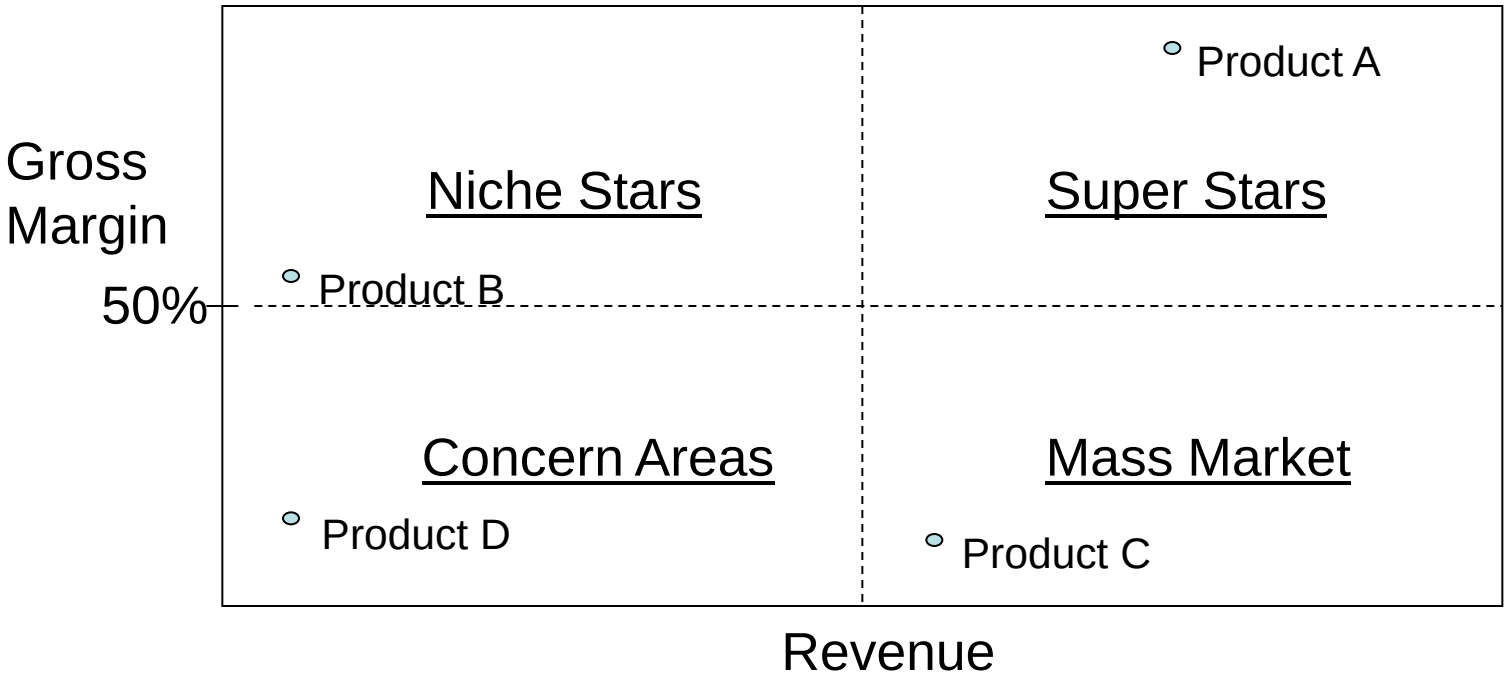
Product/ Service Sales: Revenue Trends

Product/Service Metrics



Product/ Service Sales: Market Adoption

Product/Service Success Quadrants



Product/ Service Profitability: Product Success Quadrant Tool: Graphical Format

Adapted from product profitability analysis tool by Demand Metric; Used with permission

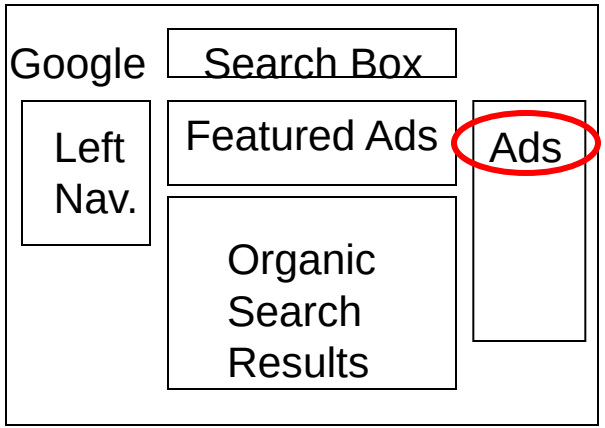
Product/Service Success Quadrants

Product/ Service	Average Revenue	Cost of Goods Sold	Gross Margin	Quadrant
Product/ Service A	High	Low	High	Super Stars
Product/ Service B	Low	Low	High	Niche Stars
Product/ Service C	High	High	Low	Mass Market
Product/ Service D	Low	High	Low	Concern Areas

Illustrative method to group products/ services by profitability

Gross Margin (Percentage) = (Revenue – COGS) / Revenue * 100%

SEM Attribute Preference Test



Pay Per Click Ads
such as Google AdWords

A Vacuum Carpets Fast
Turbo-Vortex design
Delivers 2x the suction!
www.acmevacuum.com

B Hey Allergy Sufferers!
Hyper-HEPA filter
Removes 1-micron particles
www.acmevacuum.com

C Vacuum Drapes Easily
EZ-DRAPE attachment
Cleans curtains with ease!
www.acmevacuum.com

Test	Clicks	Buys
A	240	12
B	300	2
C	4	0

Apply Search Engine Marketing (SEM) to test attribute preferences

Check Your Understanding

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Decision Tree Models	Select among multiple product development projects
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