



Building a Test and Learn Discipline

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PNC Financial Services Group

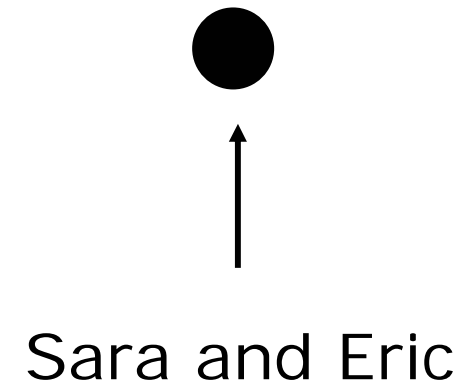
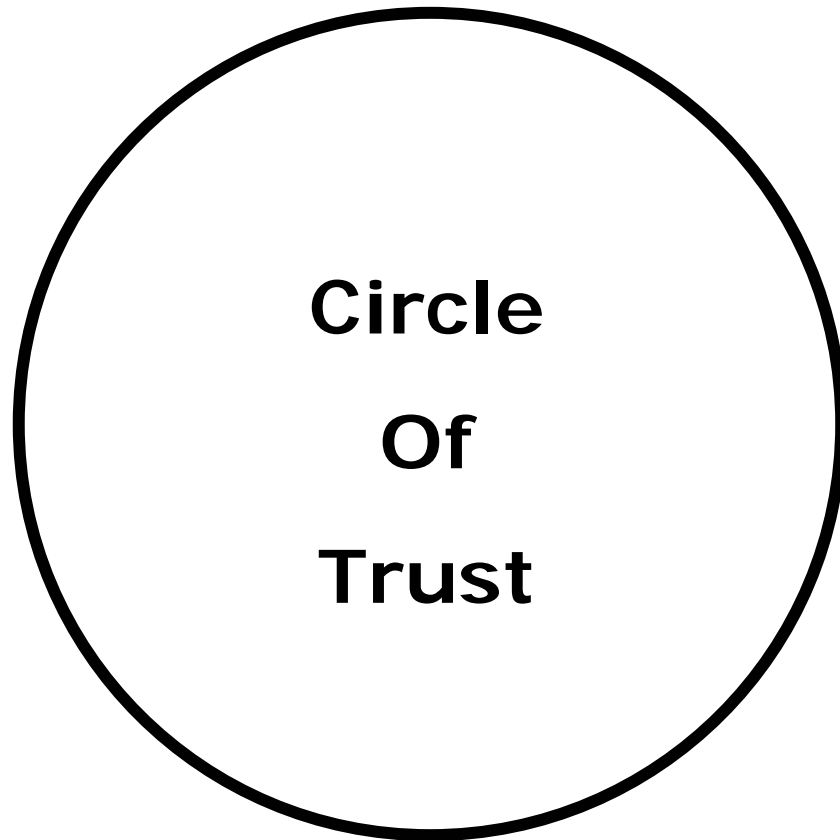
Innovators' Summit -- October 2007

About PNC

ASSETS	\$125.7 billion	
DEPOSITS	\$77.2 billion	
SHAREHOLDER EQUITY	\$14.5 billion	
ASSETS UNDER MGMT	\$77 billion	
PRIMARY BUSINESSES	Retail Banking	Consumer and small business banking, individual wealth and institutional investment management
	Corporate & Institutional Banking	Financial services for companies and government agencies
	PFPC	Global fund processing services
	BlackRock	Publicly traded asset management firm (one-third ownership stake)
CUSTOMERS	Approximately 2.9 million consumer and small business customers	
EMPLOYEES	More than 28,000 in 30+ states and abroad	
RETAIL LOCATIONS	PNC Bank branches	1,084 in eight states and the District of Columbia
	Brokerage Offices	
	- Hilliard Lyons	Over 70 offices in 12 states
	- PNC Investments	23 offices in six states and the District of Columbia
ATMS	More than 3,900 machines	

Information as of June 30, 2007

In the beginning...



Finding the Opportunity

- Who will give your ideas a chance?
- Proactive
- Grass Roots
- Balance the Risk-Return Ratio
- Be Transparent
- Share the results
- Share the success

Declare a Vision

Our group is committed to continuously improving business results through rigorous, quantifiable and accelerated learning.

- We will promote a culture of learning with a respect of our history.
- We will maintain the highest standards of honesty and integrity in matters relating to each other and our work.
- We will continuously seek to understand our business, always choose the most effective analytics and to always make fact-driven decisions.

Selling the concept upwards

- Develop Executive Leadership (Not Sponsorship)
- Get your partners to speak for you
- Demonstrate Additional Opportunities
- Get Permission to go further
 - Don't Ask--Earn.

Set Guiding Principles

- Work will be prioritized based on a combination of strategic importance and potential impact.
- Partnerships will be developed to ensure consistent and meaningful content of current and future work.
- Leveraging our partnerships will be critical to getting things done in a timely and efficient manner.

Ask for help!

Our ask of you:

1. Partner with us. Communicate all things good, bad and ugly.
2. Set priorities together with us.
3. Focus on planning.
4. Be involved with the results.
5. Patience—some results take time.

Working in the culture

- Communicate, communicate, communicate
- Did I mention communicate?
- Empathy
- Transparency
- Oh, yeah, communicate
- Create Accountability

Take Action!

- Build partnerships:
 - Executive Partners: Guidance and oversight
 - Business Partners: Execution against the strategies and objectives (Product, Distribution, Finance)
 - Analytical Partners: Assistance and Teamwork will be needed (BI, Data Mining)
- Create value now: Continue to focus coverage of the key marketing programs, prioritizing by value (or spend) and strategy.
- Develop baseline metrics and standards for selected programs, create efficiency.

What could possibly go wrong?

- Who the #@\$\$&! do you think you people are?
- I don't need a control group.
- I already knew that.
- We dropped a direct mail last week, is there anything you want to test?
- I said I don't need a control group!
- You don't understand my business.
- I don't believe you.
- For the last time, I don't need a control group!



CASE STUDIES

Case Studies

1. Service Direct Mail to PNC Customers

2. Pricing Experiment

3. Product Direct Mail to PNC Customers

Case Study – Sample Size

10% isn't always the answer.

We use the Sample Size calculator to educate our partners on all the assumptions needed to determine how large the mail and control group need to be.

Sample Size

Two Proportions

Testing if two proportions are different from each other.

Alpha 0.050

Baseline Proportion 0.01

One or Two Sided 1

Supply two values to determine the third.

Enter one value to see a plot of the other two.

Difference to detect .

Sample Size .

Power .

Sample Size is the total sample size; per group would be $n/2$

Using normal approximations

Sample Size

Two Proportions

Baseline
Proportion

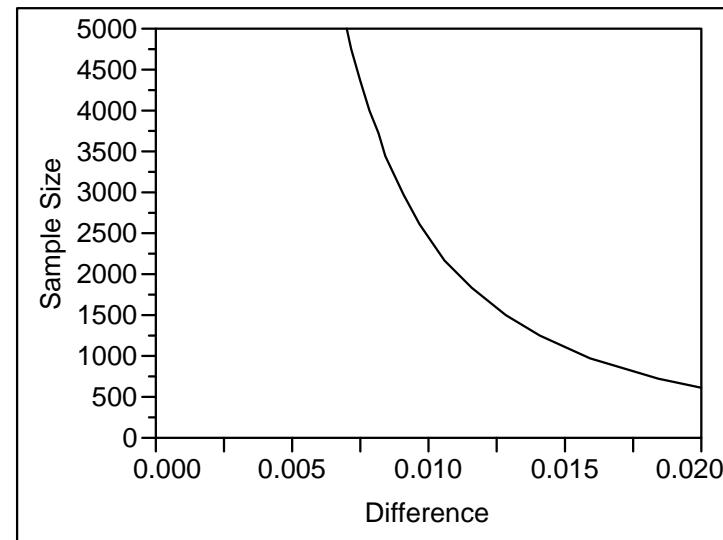
0.01

Power

0.8

Alpha

0.050



Service DM – Background

- **Product Manager does not realize the importance of a well designed experiment.**
- **Resists having a Control group because EVERYONE should be contacted to increase revenue as much as possible.**
- **Has worked with non-PNC consultants regularly to manage the product so has some level of trust in “outsiders”.**

Service DM

Goal

- Increase the number of existing customers using a free service provided with a checking account.

Tests

- Checking account activity
- Customer Age
- Tenure of the checking account

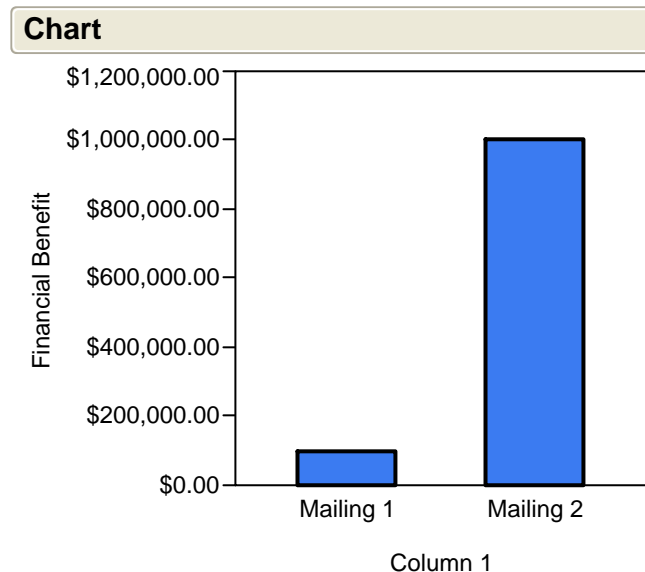
Design

- The product manager included us in the beginning of the process.
- We were able to influence the design.
- Mailed to all cells (i.e. Full Factorial) not just the “assumed winners”.

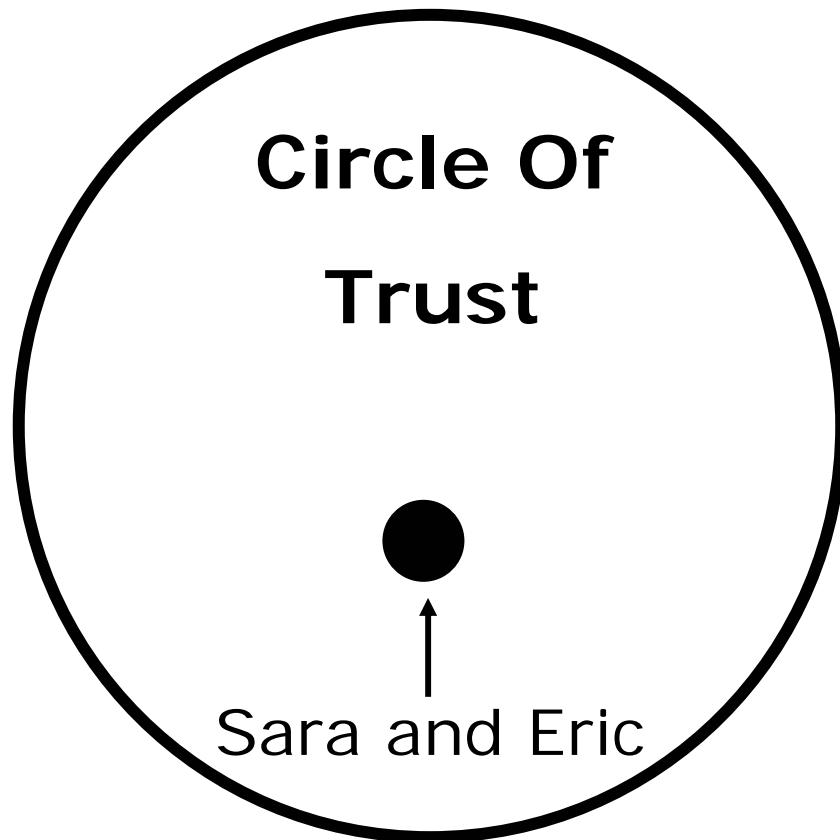
Service DM

Results

- The “assumed” winning cells did provide the highest response rate but the smallest incremental response.
- Because of the upfront planning we were able to determine which cells provided the highest incremental response.
- The insights drove the design for the next mailing which provided a 10x expected improvement financially.



Most important result...



Pricing Change – Background

- **Branch management team typically makes pricing decisions based on business experience, industry trends, and intuition.**
- **They were selected as part of a pilot Test & Learn project implemented at PNC to systematically determine the price elasticity.**

Pricing Change

Goal

- Increase revenue by testing alternative pricing arrangements.

Tests

- Geography
- Price
- Demographics

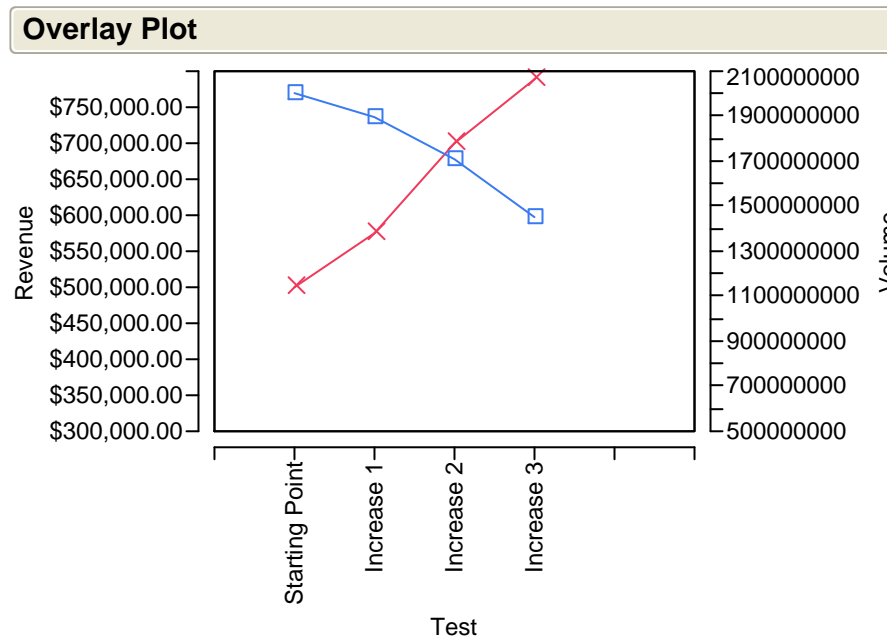
Design

- The test was designed to learn as much as possible about the test variables while minimizing the potential impact to PNC.

Pricing Change

Results

- An analysis of past pricing changes revealed an opportunity to further increase prices without any decrease in volume.
- Several tests were executed in series to determine the price elasticity.



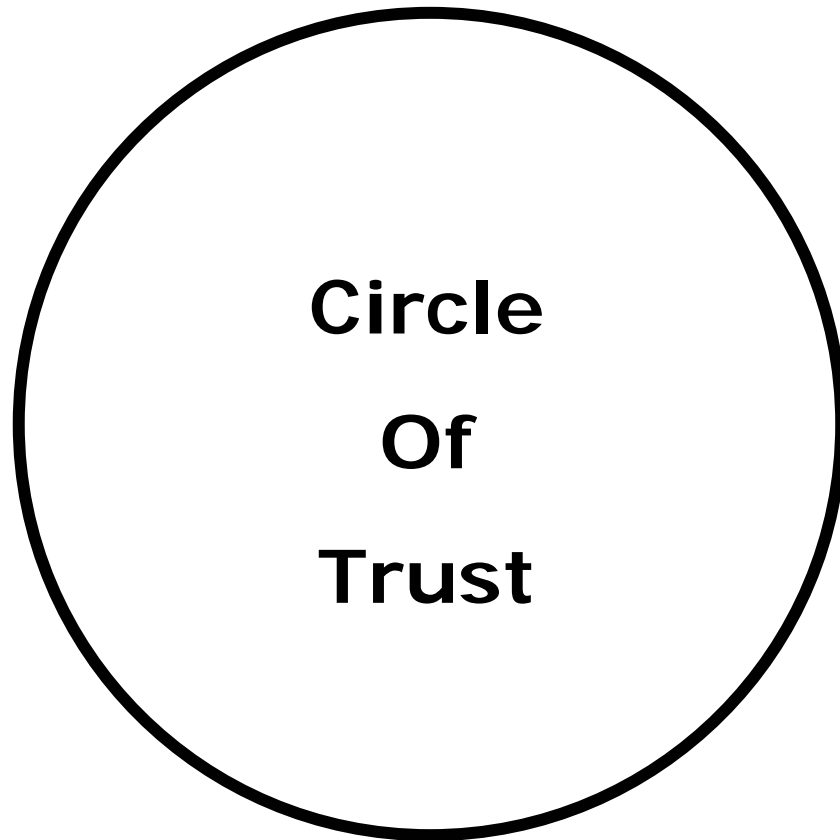
Left Scale: x — Revenue

Right Scale: □ — Volume

Product DM – Background

- **Product Manager does not realize the importance of a well designed experiment.**
- **The Product Manager feels that a control group can not possibly account for all the “noise” in the environment.**
- **Based on previous programs, the Product Manger would like to replicate a design that had high total volume but little to no incremental volume.**

Relationship Background



Sara and Eric not even in the same universe

Product DM

Goal

- Cross sell the product to existing PNC customers to increase the balance sheet.

Tests

- Propensity to Buy Models
- Share of Wallet Models

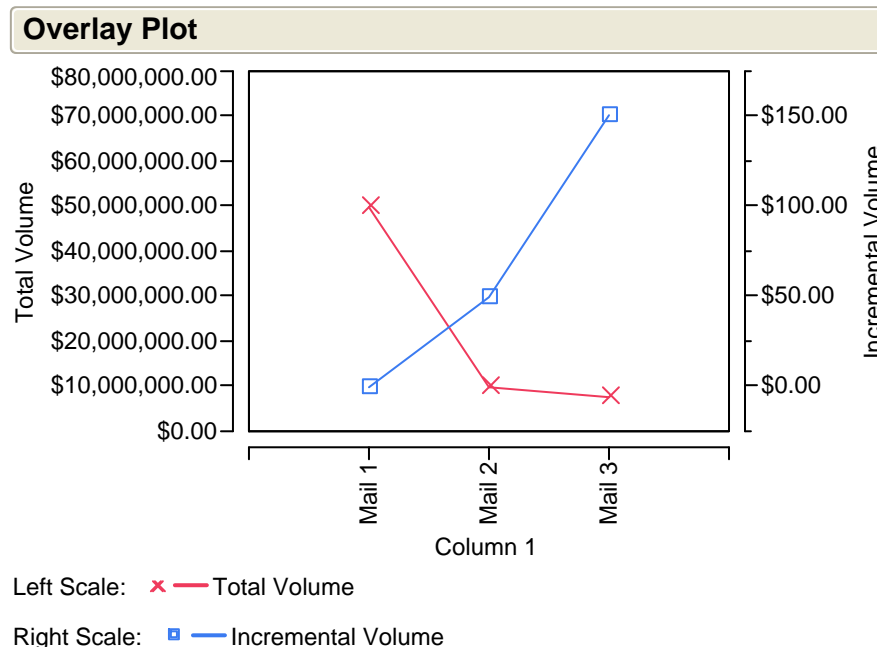
Design

- Luck
- The number of customers in the cells that historically provided the highest incremental growth was large enough to satisfy the product manager's volume requirements.

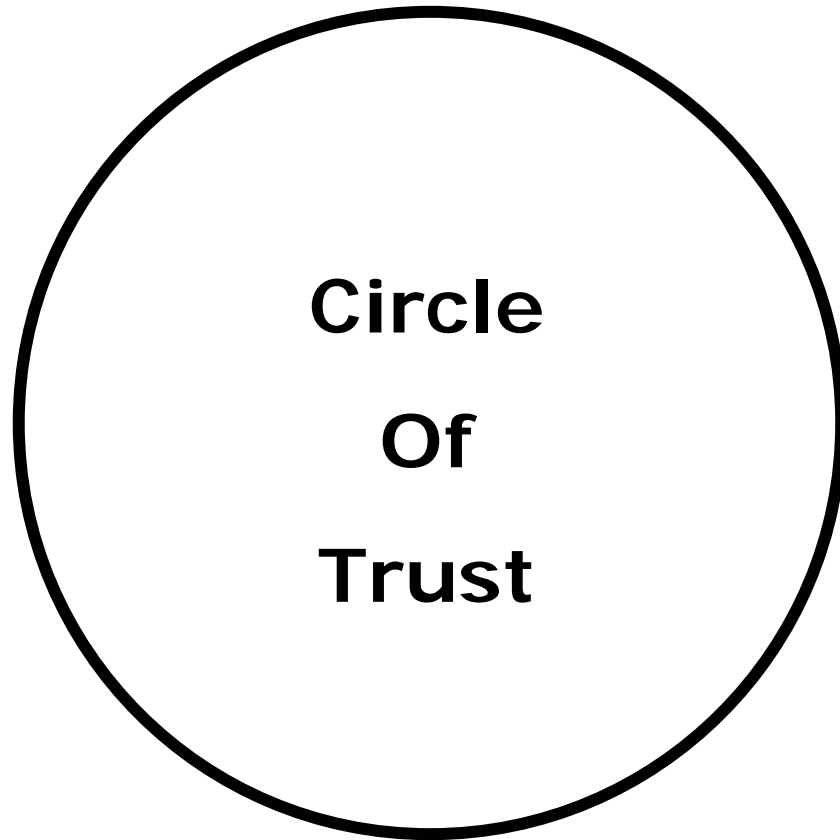
Product DM

Results

- In this case, several direct mail programs were executed with tighter targeting in each successive program.
- The total volume was unpredictable but the incremental volume increases with each implementation.



Result...



Sara a

Last Things

- Be passionate
- Have urgency and determination
- Invest in people
- Expect great things to happen
- Have fun!

Details: A roadmap

- People
- Process
- Technology

Road Map Details: People

Commitment	Purpose
Create	To create the team and establish principles: Teamwork, Productivity, Life. Introduction of long-term test and learn culture.
Relate	Develop the relationships critical to the support of this team, in addition to becoming one with the entire PNC community
Learn	Cross Train team in areas such as: Analytics, Communications, Business Acumen and Leadership
Evolve	As the team matures and integrates into everyday PNC life, we will need to respond to increasing our knowledge as well as the changing business and competition pressures

Road Map Details: Process

Commitment	Purpose
Standardize	Development of default and standard metrics and communications to be able to handle increased volume of programs and measures needed.
Innovate	Bring new and creative ideas of evaluation to PNC. Innovative and efficient experiments, leadership in maximize learning from every test.
Optimize	Continue to bring together standards and new innovations together to increase the efficiency of the team, business and results, in addition to the overall value created

Road Map Details: Technology

Commitment	Purpose
Automation	To create efficiency, automate where needed.
Memory	Develop a repository to keep tests and results such that prior learning can be recalled and searched in a manner to “never repeat” past tests.
Integration	Tie together databases, software and other systems
Efficiency and Capability	Where can software accelerate?