MEASUREMENT

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INTRODUCTION

- Measurement is critical for both for-profits and non-profits
 - It serves as a score card to assess which tactics and strategies are successful and which are not

PURPOSE OF THE LECTURE

- Provide a measurement paradigm
- Show how metrics help drive organizational strategy and success or failure
- Provide examples of key metrics for different organizations
- Describe how to provide estimates of metrics with little data

EXAMPLE – LARGE TELECOM

- A large telecom has decided to replace a significant part of its customer service staff with an automated answering system that "answers" customer inquiries.
- The head of operations has estimated the cost savings per year in the range of \$10 million.
- The cost of the system is estimated to be \$18 million
- Using a cost of capital of 15% and projecting for 10 years, the firm estimates the payout is approximately \$58 million

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- Input Automated answering system
- Activities Identifying the most cost-effective system
- Output Labor savings and ROI

- The head of operations is expecting a "raise" due to the high expected ROI of the project
- Good investment?

- What is missing?
- The firm implemented the system and found tremendous customer backlash
- A survey conducted by the firm found 71% of the customers were dissatisfied with the firm's customer service
- The financial impact was two-fold
 - Customer retention dropped from 91% per year to 78%
 - New customer acquisition based on seeing reviews dropped by 26%.

KEY LESSON

- Output measures (high ROI for project) were very favorable but impact measures (customer satisfaction, retention rates and customer acquisitions) were highly negative.
- It is not enough to measure outputs, you must also focus measuring impact

MEASUREMENT PARADIGM



MEASUREMENT PARADIGM

- Inputs: These are the resources, data, or materials that are fed into a system or process.
 - Examples include raw materials, information, or human resources.
- Activities: This stage involves the processes or activities that transform inputs into outputs.
 - It can include various methods, techniques, or workflows that facilitate this transformation.

MEASUREMENT PARADIGM

- Outcomes: The tangible or intangible result of the activities.
 - Outcomes can be goods, services, reports, or any deliverable produced.
 - Common measures for-profit organizations are sales, margins and profits
- Impact: The long-term effect of activities.
 - Impact reflects the effectiveness of the process and can include changes in behavior, knowledge, or conditions resulting from the outcomes.
 - For profit organizations it provides information about the long-term effect of the strategies and investments of the organization

OUTCOME VS IMPACT

- Outcome evaluation is a type of summative evaluation that focuses on the observable effects of a program on a specific population, organization, or social condition.
- Impact evaluation is another type of summative evaluation that examines a program's long-term goals and the broader effects it has on participants.
- Outcomes are often short-term and measurable, while impacts can be long-term and more subjective

NON-PROFIT EXAMPLE

TWIN CITY RISE

- Twin City Rise's (TCR) goal is to find a solution to the poverty experienced by many people of color in the Twin Cities.
 - It assists individuals in finding stable and well-paying employment.
- TCR program focuses on individual development, personal empowerment, career training, and the 21st Century skills that today's employers are in search of.

TWIN CITY RISE

What measures would you use for TWC's?

MOST SOCIAL SERVICE ORGANIZATIONS' METRICS

- Number served (Input)
- Cost to serve (Process measure)

TWIN CITY RISE METRICS

- Cost to serve (outcome)
- Lack of criminal recidivism (outcome)
- 2-year salaries (Impact)
 - Graduates of this program typically double or triple their annual income.
- ROI (impact)
- Economic impact on Minnesota (impact)

RESULT

- State of Minnesota provided significant funding to TCR
 - Could see how the program generated addition net positive cash flow (revenues minus costs of the program) for Minnesota
 - Other programs used outcome measures but no impact measures
 - Funding was far less than TCR

BILL & MELINDA GATES FOUNDATION

• Outcomes:

- Distributed over 200 million insecticide-treated bed nets in sub-Saharan Africa.
- Trained healthcare workers in 15 countries on malaria diagnosis and treatment.
- A significant increase (70%) in the use of bed nets by families in high-risk areas.
- Local healthcare capacity improved, with more accurate and timely diagnoses of malaria, resulting in faster treatment

BILL & MELINDA GATES FOUNDATION

• Impact:

 In targeted areas, malaria deaths reduced by 45% between 2020 and 2023.

Impact v Outcomes

• This shows that while the output is large-scale distribution of bed nets and training sessions, the real impact is in the reduction of deaths and increased use of preventive measures.

ESTIMATING METRICS IN LOW DATA SETTINGS

- Common problem for entrepreneurs is that data for their venture is scarce
- A potential solution is Fermi Estimation
- We will provide an example

FERMI ESTIMATION (FERMI PROBLEMS)

- Enrico Fermi popularized the use of the kind of questions we now call "Fermi problems" (or "Fermi questions").
- Fermi problems (FPs) are back-of-envelope problems that arose from the need to make order of magnitude calculations, and Fermi himself used them in his own research and physics classes.
- The procedure proposed by Fermi was to break the original problem down into simpler sub-problems, solve these by making reasonable estimates and educated guesses, and thereby reach a solution to the original question.
- In the literature, this way of working is known as the "Fermi (estimates) method."

EXAMPLE – DOT.COM RETAILER

- 2001 an entrepreneur created a "Dot.Com" to sell vitamins, herbs and supplements
- First question is: Does it have a USP?
- Second question is: What is their business model?
- Because I helped them find a Chief Marketing Officer, they offer me a chance to purchase shares through "friends and family" at a pre-valuation level
- Should I buy?

BUSINESS MODEL

- Acquire customers through
 - Web advertising and word-of-mouth
 - Cost of customer acquisition \$400
- Do you think this customer acquisition cost is viable?
- You can use "Fermi estimation" to provide an answer

KEY QUESTIONS

- How much does the average customer purchase per purchase occasion?
- What is the annual frequency of purchase?
- What are the profit margins?
- What are the delivery costs?
- What is the retention rate per purchase occasion?

- How much does the average customer purchase per purchase occasion?
 - \$35
- What is the annual frequency of purchase?
 - 4 times
- What are the profit margins?
 - 70%

- What are the delivery costs?
 \$5
- What is the repeat purchase rate per purchase occasion?
 50% on first purchase, 75% on second and 90% on third and beyond

- Net profit before acquisition cost using my Fermi estimate is \$78.88 per customer assuming a three-year life
 - The profit per purchase occasion after 3 years is \$3.00.
 - For one more year it only adds \$12.

- Good business?
- Should I invest?
- Answer I was the only person who did not take advantage of the pre-public offering
- What do you think the result is?

- The company went through \$180 million in capital in 18 months and entered bankruptcy
- Key lessons
 - The hype of the dot.com era led to an investment frenzy and many investors did not do simple analyses using basic metrics
 - Basic measures, even approximate using Fermi estimation show the true picture
 - Learn how to use Fermi estimation

TWO BUSINESS TYPES AND METRICS

UNDERSTAND YOUR TYPE OF BUSINESS

- Key metrics depend in part on the type of business you run
 - High fixed cost, low variable cost business
 - Airlines
 - Telecommunication companies
 - Low fixed cost, high variable cost businesses
 - On-line retailers
 - Restaurants

HIGH FIXED COST BUSINESS METRICS

- Focus on ROI of investment
- Determine how to drive incremental customers into the same fixed cost operations
- Identify ways to raise prices per customer through incremental services

HIGH VARIABLE COST BUSINESS METRICS

- Drivers of cost to serve customers
- Labor costs
- Drivers of increasing incremental sales per customer

KEY INSIGHT

- No single or set of metrics fits every situation
- Each organization needs to understand which metrics will drive longterm impact
- Successful businesses track metrics which will influence both outcomes and impact

KEY INSIGHT

- As an entrepreneur, you must try to identify these key metrics <u>before</u> you begin operations
 - If this is difficult or not possible, begin identifying these metrics as soon after launch as possible
 - Use Fermi Estimation to create initial estimates even with low-data situations