

# Module II Overview

**PLANNING: Things to Know  
BEFORE You Start...**



# If you can't measure, you can't manage

- In this section, we discuss:
  - How to diagnose a web site's well being using multiple **performance metrics** [notice not just HOW, but HOW WELL!]
    - Counting visitors
    - Conversion Rate
    - Counting dollars
    - And more...
  - How to measure web site performance based on your **goals**
  - Tools that help your web analytical needs

# Metric 1: # of Visits / Visitors

- **Cookie:** a piece of text that a Web server can store on a **user's** hard disk. The pieces of information are stored as **name-value pairs**
  - By using cookie, servers store the state of your machine
- **Session:** theoretically, one visit paid by the customer to your web site
  - Technically, hard to accurately measure
  - Often session = visit in SEM context

**session-id-time**  
**1159167600I**  
**amazon.com/**

# Metric 1: # of Visits / Visitors

- **Number of visits:**  
the number of unique sessions as counted by the server
- **Number of unique visitors:**  
the number of unique machine IDs that visited the server
- Both were actively used to measure site performance around 2000

# Metric 1: # of Visits / Visitors

- Issues with visits / unique visitor
  - Issue with session
  - How unique is “unique”?
- Financial analysts have become increasingly skeptical of non-financial metrics [[Gupta et al. 2004](#)]

# Metric 2: Stickiness - Related

- Visit duration / page views
- Textbook (as well as Brian 😊) explains in detail how page views are counted
  - Simple log for each requested file (but file != page)
  - Heuristics to solve the problem (but distributed environment!)
  - Single pixel tracking
- Stickiness = average duration / page view

## Metric 2: Stickiness - Related

- **Conventional wisdom** suggests stickiness to be a valuable metrics
  - Reflects high loyalty
  - Implicates higher likelihood to purchase
- **Page views** offer some explanatory power but do **not** appear affecting firms' net incomes [Trueman et al 2000]
- **Stickiness** is capable of explaining the share price of Internet firms [Demers and Lev 2001]

# Metric 2: Stickiness - Related

- Positive relationship between stickiness and purchase [Wu et al. 2005]
- Positive relationship between stickiness and conversion [Lin et al, 2006]
  - Duration significant for experience goods
  - Page views significant for search goods



# Solving Measurement Issues

- Server – side solution vs. Client – side solution
  - Companies could invest in technology and build stronger **server side** monitoring programs (**limitations exist**)
  - Or they could buy service from companies such as comScore to get **client-side** monitoring capability

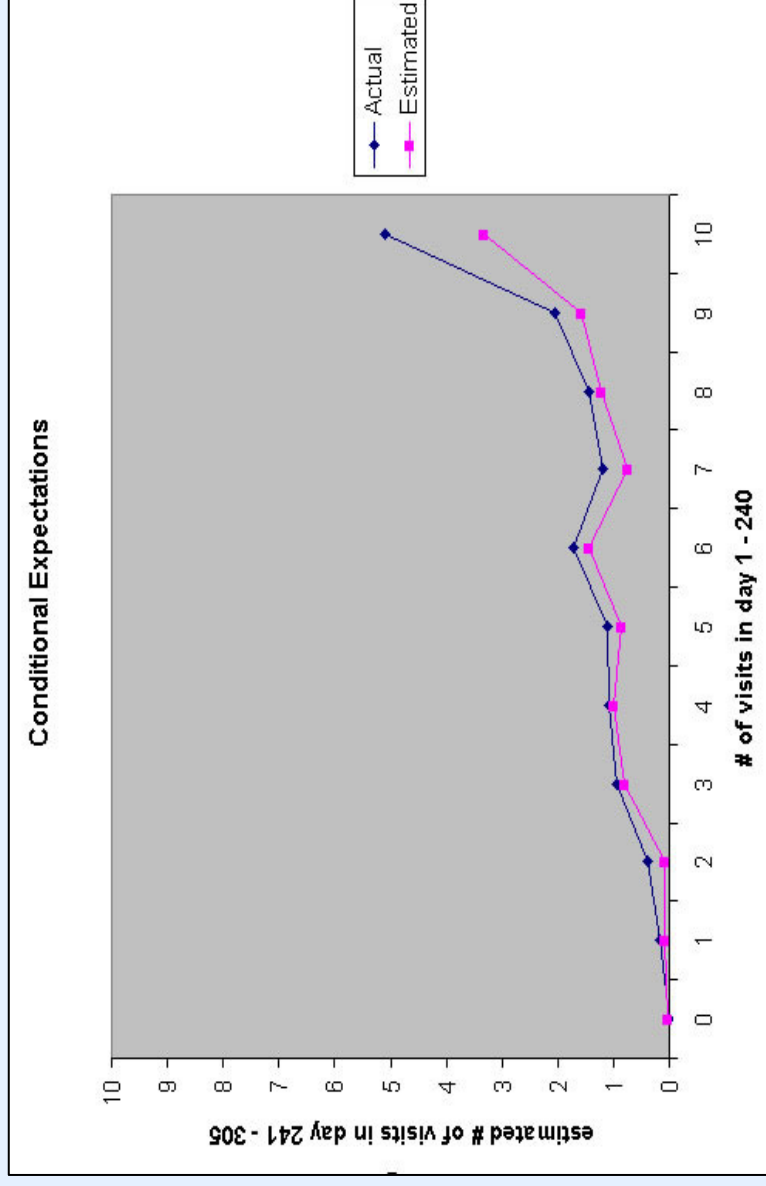
Total number of participating households	100,000
Total number of website visits	213,356,003
Total number of online purchases made	342,706
Total number of online purchases made in shopping websites	174,990
Total number of websites visited	1,392,713
Total number of websites belonging to shopping category	46,942
Total number of websites that offer direct sales services	601
Number of websites in shopping category that offer direct sales services	330

# Metric 3: Stochastic Models

Models	Purchase Behavior		Death Events	
	Purchase Rate Assumption	Heterogeneity in purchase rate	Death Rate Assumption	Heterogeneity in death rate
NBD (Gupta and Morrison 1997)	Poisson	Gamma	None	None
Pareto/NBD (Schmittlein 1987)	Poisson	Gamma	Exponential	Gamma
BG/NBD (Fader et al 1004)	Poisson	Gamma	Geometric	Beta
Dynamic NBD (Moe and Fader 2004b)	Poisson with variation	Gamma	None*	None
Joint Model (Boatwright, et al) <sup>**</sup>	Inter-purchase time: Poisson	Gamma	None	None
Dynamic Model (Allenby et al 1999)	Inter-purchase time: Gamma	Inverse Generalized Gamma	None <sup>***</sup>	None

# Metric 3: Stochastic Models

- Enables **individualized prediction**
- Hard to implement
- Mostly academic research, no industry adoption yet



# Metric 4: Conversion

- **Conversion** = number of **actions** / number of visitors
  - Average conversion is at 5% and decreasing [Moe 2004]

Vertical	Conversion Rate (%)
Catalog	6.1
Specialty stores	3.9
Fashion/apparel	2.2
Travel	2.1
Home and furnishing	2.0
Sport/outdoors	1.4
Electronics	1.1
All verticals	2.3

Source: Firedlick Index

# Metric 4: Conversion

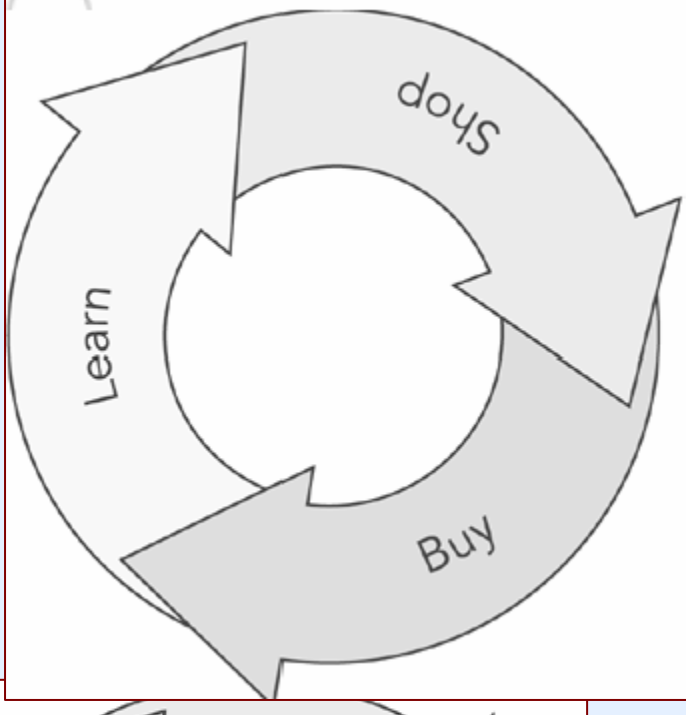
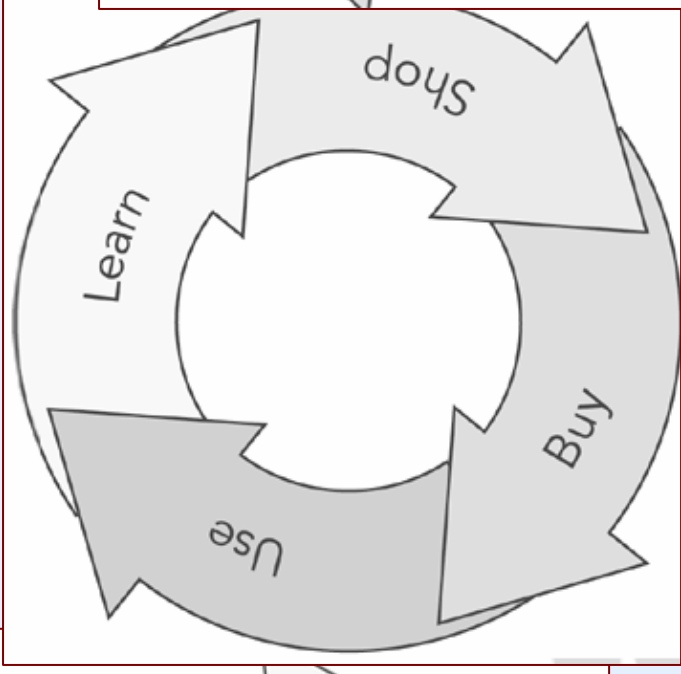
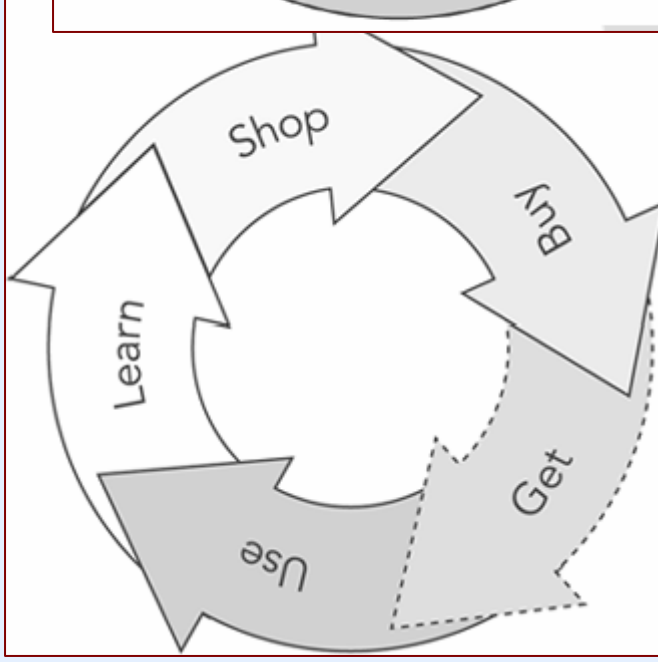
- **Conversion** = number of **actions** / number of visitors
  - Average conversion is at 5% and decreasing [Moe 2004]
- A relatively well-accepted metric for measuring web site performance
- Depending on the goal of the web site (remember last chapter?), the meaning of “**action**” might differ

September 2004	
Number of orders	4,000
Divided by: Number of Web visits	100,000
Conversion rate	4%

December 2004	
Number of leads	7,500
Divided by: Number of Web visits	100,000
Conversion rate	7.5%

# Metric 4: Conversion

## Revenue Generation

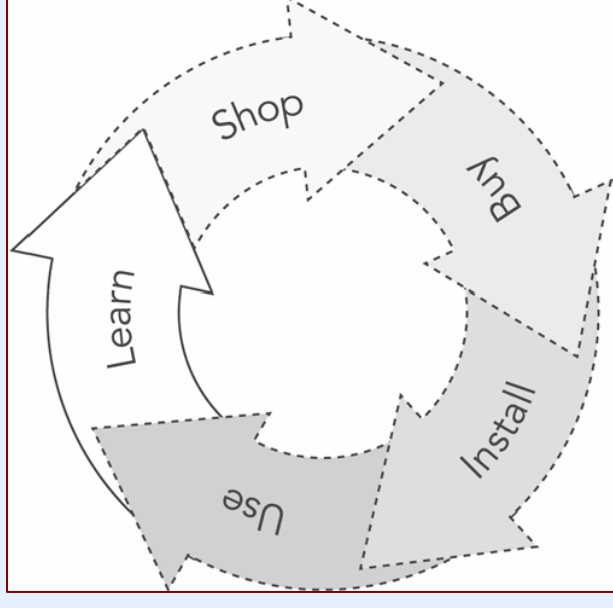


- Simplest to calculate
  - Use e-commerce system to find number of transactions
  - Use web analysis program to find number of visits
  - Purchase / visits

# Metric 4: Conversion

## Lead Generation

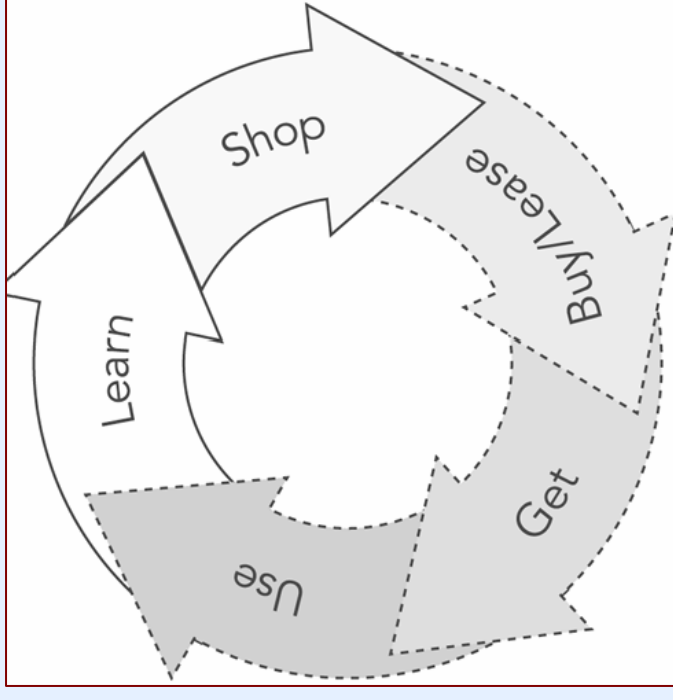
- For lead generation with the goal of acquire new customer information
  - Count each visitor who fills in web contact form as an action
  - That means **connect the form with lead management system**
  - You can also continue to track these visitors and capture their **purchase** events as well



# Metric 4: Conversion

## Lead Generation

- For lead generation with the goal of offline sales:
  - Need innovative methods for the **offline** channel to identify traffic re-directed from online
  - **Special** phone number, special coupon, etc
  - **“Call Me”** button
  - **Questionnaires** at the offline locations



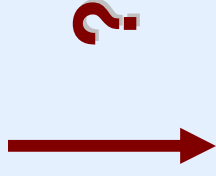


# Metric 4: Conversion

## Lead Generation

- For lead generation with the goal of offline sales:
  - Measuring the lead is only the first step...

<i>December 2004</i> Out of 100,000 Visitors, How Many ...			
	Number of Web Visitors Converted	Web Conversion Rate	
Called a special phone number?	10,000	10%	
Brought discount coupon to a dealer?	3,000	3%	

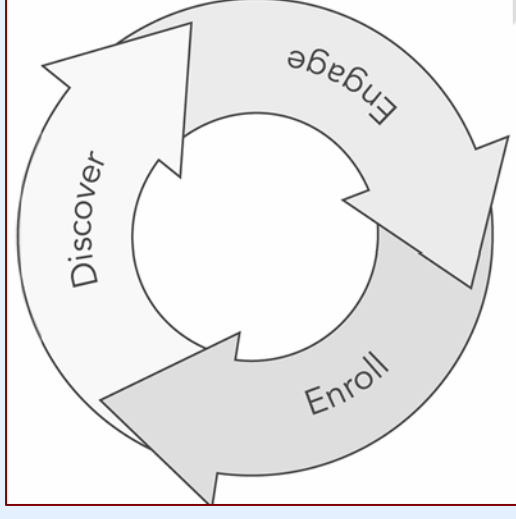


<i>December 2004</i> Average Order: \$2,000					
	Web Conversions	Sales Conversion Rate	Offline Orders	Sales Revenue	
Special phone number	10,000	1%	100	\$200,000	
Discount coupon	3,000	10%	300	\$600,000	
Online quote	1,000	10%	100	\$200,000	
Totals	14,000	3.6%	500	\$1,000,000	

# Metric 4: Conversion

## Brand Image

- Abstract and hard to measure
  - First, define what is a conversion based on the goal of your campaign
  - Then implement possible mechanism to capture conversion behaviour



# Metric 5: Monetary Measurements

- **Cost per Action:** the advertising cost you pay for one completed action
  - Advertising Cost / Total Completed Actions
  - For example, 1,000 visitors, \$ 1 per visitor, 20 end up purchasing, then cost per purchase = ?
- **Value of a Buyer:** the average gross profit you earn from a completed action
  - Average Action Value x Gross Profit as % of Sales
  - Average Action Value = revenue / action
  - For example, last month you spent \$1,000 on advertising to generate 2,000 visitors and 20 bought at an average of \$100 per sale with a gross profit margin of 90.

# Web Analysis Tools

- **Tools that help analyzing the web site performance**
  - **Basic Level:**
    - number of visitors to the site,
    - unique/return visitors
    - traffic referrers
    - search engine referrers
    - search keywords used
    - page views
    - visit paths
    - average number of page views per visitor
    - entry and exit pages

# Web Analysis Tools

- **Tools that help analyzing the web site performance**
  - Advanced Level:
    - Conversion stats.
    - Dividing the website into logical categories and monitoring each separately
    - Bounce rates- the percentage of visitors who leave the website within the first x seconds of the visit.

- Example