Metrics for Performance Measurement in eCommerce

Source: SPSS – eMetrics – Business metrics for the New Economy

Learning Outcomes

1. Explain the benefits that metrics provide to an e-business.
2. Identify and describe the importance of the major types of metrics.
3. Explain how traffic metrics can help an e-business assess its internal processes.
4. Explain how marketing-oriented metrics can help an e-business plan its marketing efforts.
5. Identify other performance metrics.
6. Describe the major sources of data for creating performance metrics.

Why Measure?

“if you don't measure it, you cannot manage it”

A key competency of the accounting profession, and a great opportunity to add value by…

- **improving understanding of business model**
- **helping to communicate corporate strategy**
- **motivating performance**
- **analyzing actual performance**
- **increasing accountability**

Aligning Metrics with Business Objectives

A business may have different objectives at different times in its life.

- **Maximize Traffic**
- **Maximize Sales**
- **Increase Market Share**
- **Minimize Transaction Costs**
- **Maximize Return on Investment**
- **Balance Multiple Competing/Conflicting Objectives**

Traditional Business, e-Business and metrics

- e-business has generated a number of new business models
- companies require new metrics - e-metrics — to calibrate their success.
- Indicators of e-commerce effectiveness are necessary
  - Web efforts are paying off.
  - Are you attracting new people to your site?
  - Is your site ‘sticky?’ Which regions in it are not?
  - What is the shape of your lead qualification funnel?
  - How proficient is your conversion of browsers to buyers?
  - What customer segments do you track?
  - How do these segments differ?
  - What makes them loyal?
  - How do you measure loyalty?
  - What attributes describe your best customers that can help you target other prospects like them?
  - How can profiling help you cross-sell and up-sell?
  - What is your churn rate?
  - What site behavior on your site indicates that a prospect is ready to buy?
  - What progression through sections of your site do you wish to encourage?
  - What is the optimal product assortment on a page

Traditional Business Metrics

- Financial reports provide a comparison of performance
  - from one period to another,
  - one company to another,
  - and one company to an entire industry.
- Overall corporate value:
  - Market capitalization
  - Price-to-earnings ratio
  - Fixed assets
- Corporate process management:
  - Cash flow
  - Inventory turnover
  - Net profits
  - Customer turnover
- Financial expectations:
  - Market share
  - Book-to-bill ratios
  - Revenue per customer
  - Revenue per employee
  - Industry sector growth

Brick-and-mortar metrics are growing up

- How shoppers shop.
  - We usually turn to the right when entering a store.
  - Men hunt, while women graze
    - 65 % of men taking jeans into a fitting room will make a purchase,
    - versus only 25 percent of women.
  - If commonly shopped items are positioned in the rear of the store, store browsers are more likely to make an impulse purchase along the way.

Paco Underhill's *Why We Buy: The Science of Shopping* (Simon & Schuster, 1999)

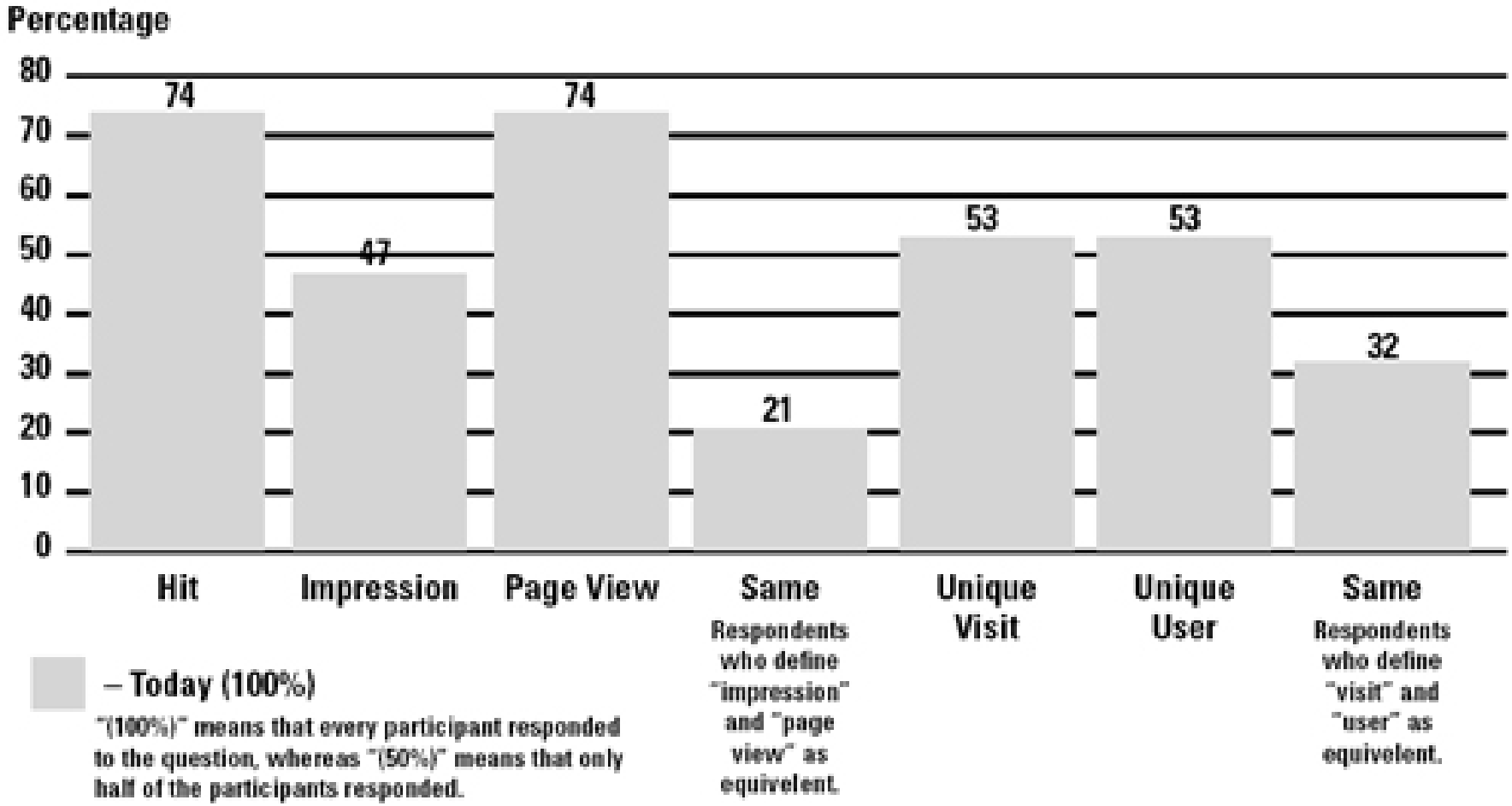
E-metrics: the new breed

- Collecting behavior data in an online environment is much easer
- Web servers and e-business systems collect detailed customer behavior data automatically
  - record every click at every moment
  - Further information can be gleaned from third-party panel measurement services
  - as well as from explicit site-based surveys.

Limitations of Metrics

- Strategies rapidly changing
- Online measures can be ambiguous
  - e.g., is stickiness good or bad?
- Measurement requires resources
- Vulnerable to integrity/confidentiality problems
- Soft metrics not as accepted
- "In" Metrics rapidly changing
  - hits>page views>conversion rates

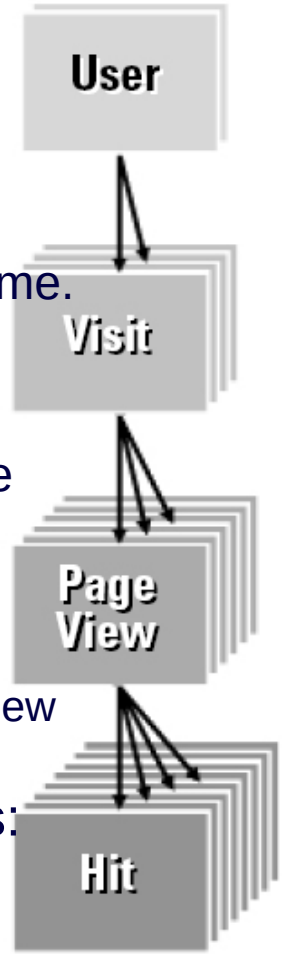
% of e-Businesses with standard definitions



Percentages of e-businesses with standard definitions for each of the core measurements.

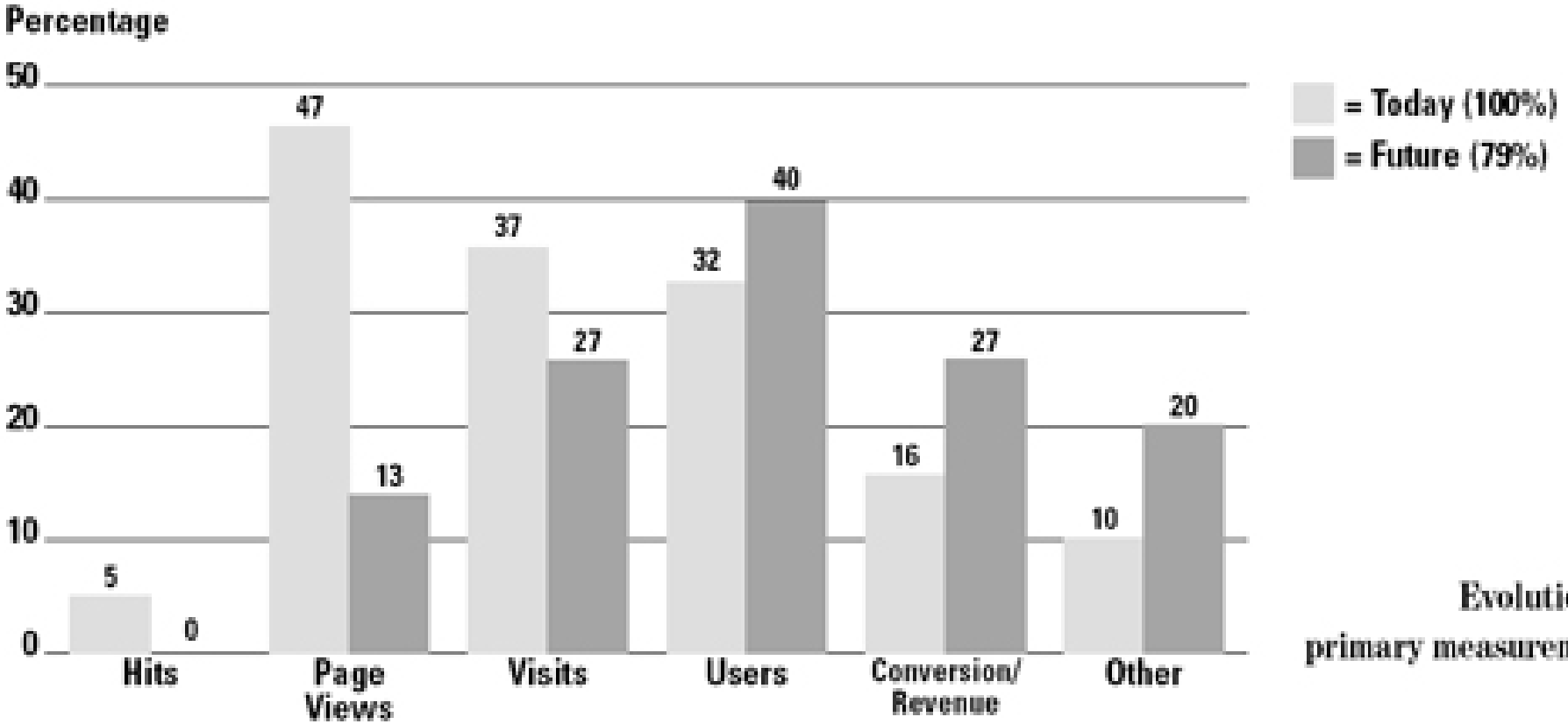
Standard Definitions

- Analysis is about understanding customers, not page views or hits.
- These are related –
  - A customer uses your Web site. They becomes a unique ‘user’.
  - Each time this user explores your site, you receive a ‘visit’ from that user.
    - Thus, a user may have many unique visits to your site over time.
  - Each visit by a user is composed of a series of pages that they see
    - Thus each visit is composed of a time-ordered series of ‘page views’, otherwise known as a ‘clickstream’ or ‘click path’.
    - Each page on your site contains many constituent objects
      - such as body text, images and video files.
      - Each of these results in a ‘hit’ to your Web site, so each page view comprises many hits.
  - Ensure that your business has standard internal definitions:
    - hits, page views, ad impressions, visits and users.
    - Document these standards



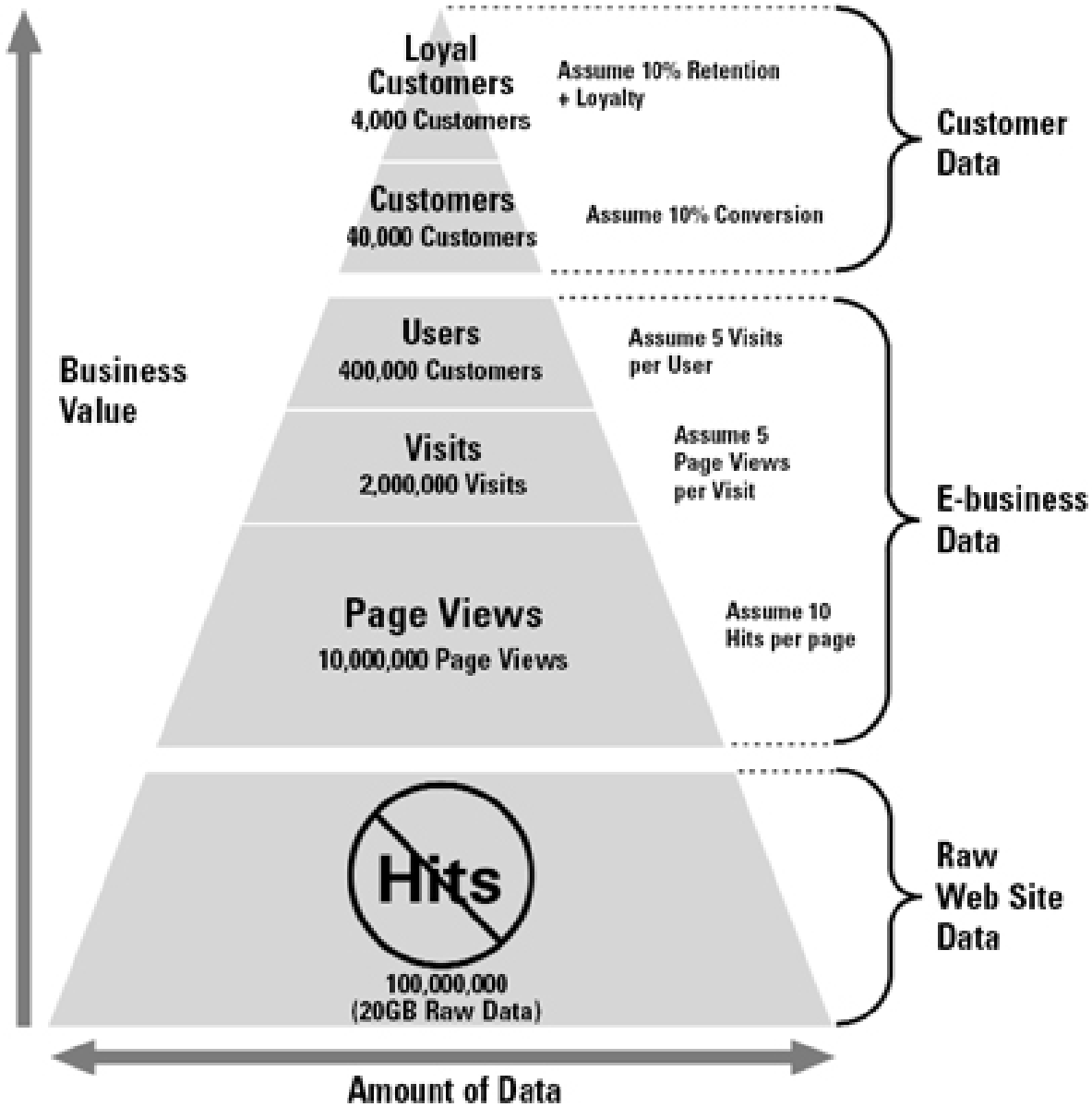
The hierarchy of Web site activity.

e-metrics Present & Future



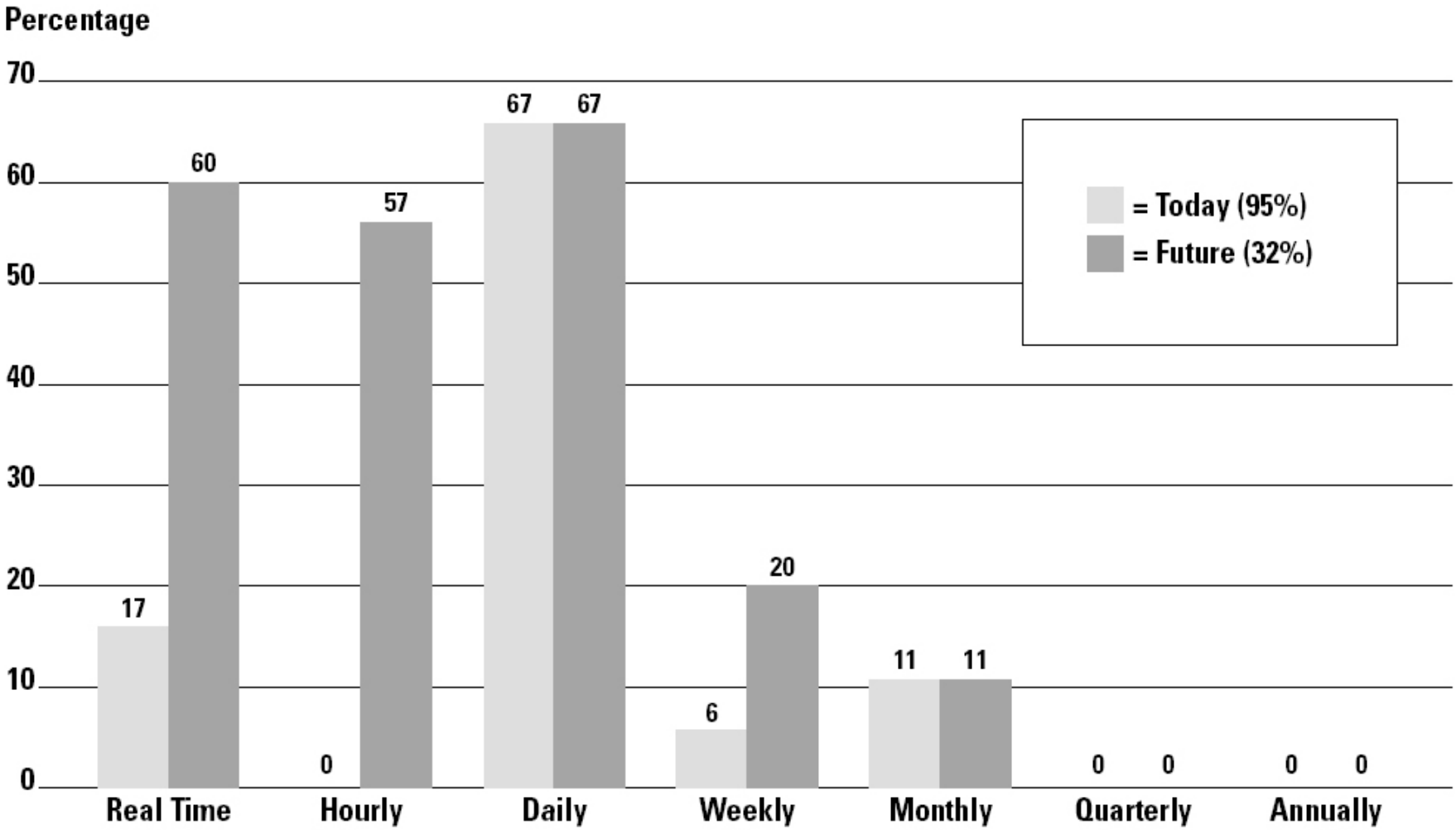
Evolution of primary measurements

Business Value and Amount of Data



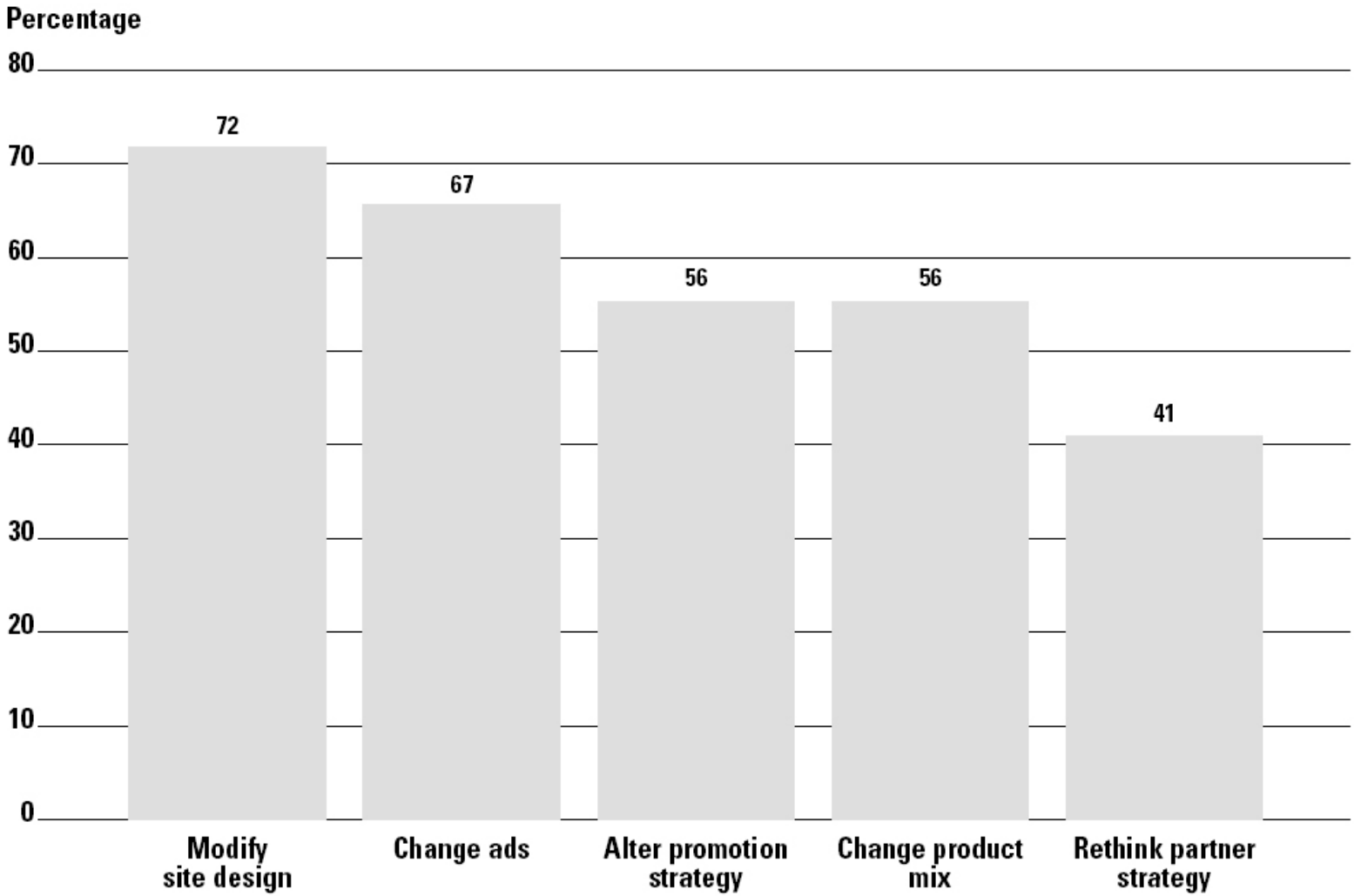
Relationship between data volume and customer knowledge.

Time frame for e-metrics results



Time frame for e-metrics results.

Actions taken based upon e-metrics



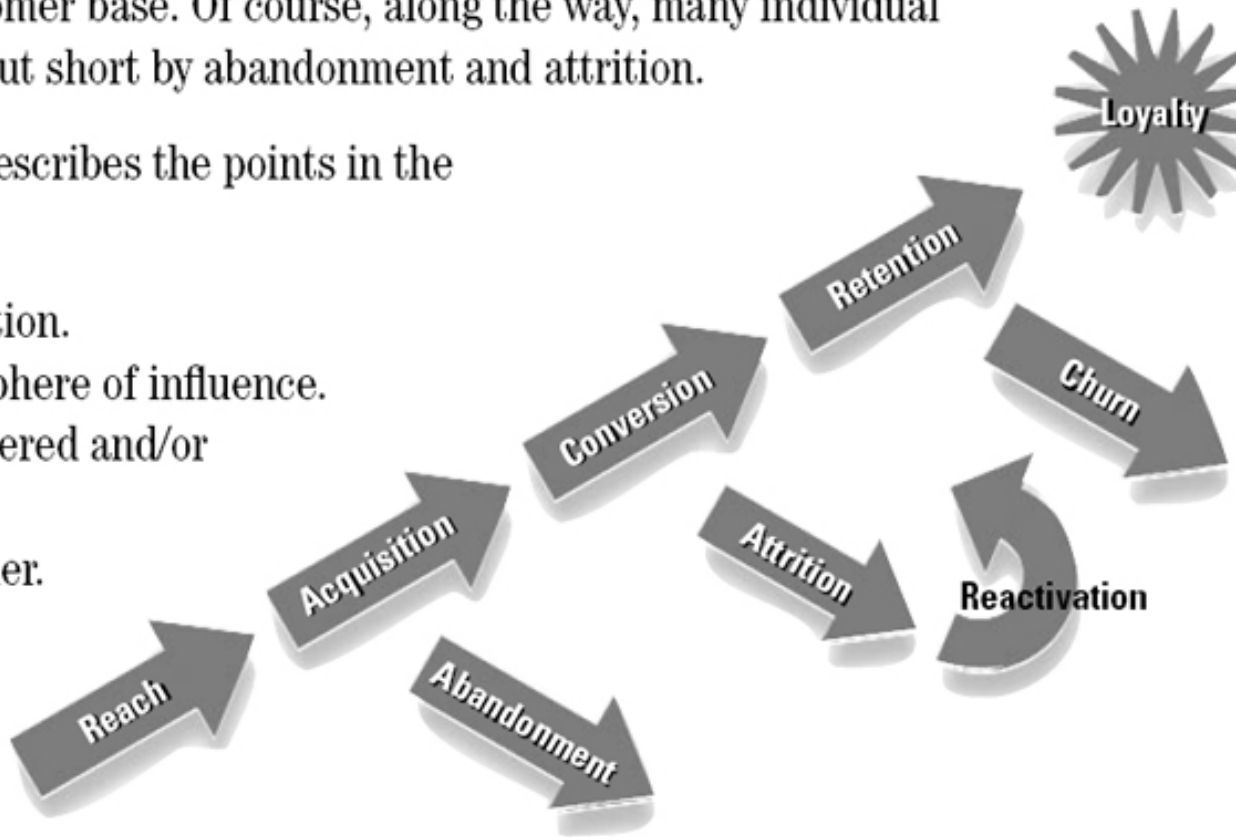
Actions taken based on e-metrics results.

Customer Life Cycle

The Customer Life Cycle starts with reaching your target market and progresses towards an established loyal customer base. Of course, along the way, many individual customer life cycles are cut short by abandonment and attrition.

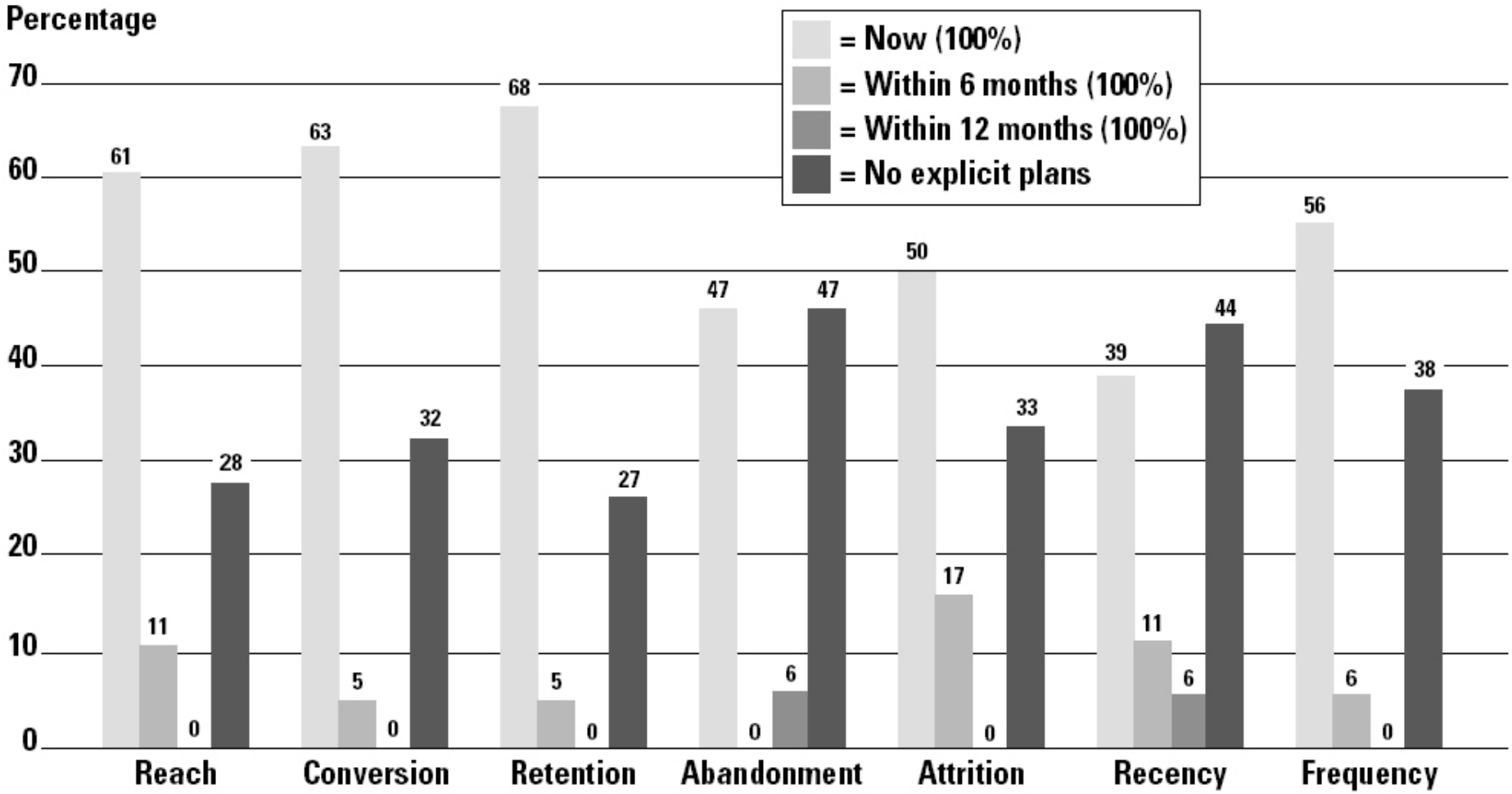
The customer life cycle describes the points in the continuum where you:

- Claim someone's attention.
- Bring them into your sphere of influence.
- Turn them into a registered and/or paying customer.
- Keep them as a customer.
- Turn them into a company advocate.



The customer life cycle from introduction to loyalty.

Customer Life Cycle metric tracking



Customer life cycle metric tracking.

Abandonment

- curious characteristics of online sales is the shopping cart abandonment factor
  - relatively rare in a ‘brick-and-mortar” environment
- reasons are many
  - poor site navigation and usability.
- How can a shopper be encouraged to become a buyer?
  - By tracking, measurement, and management.
- Online stores are taking action based on:
  - The ratio of abandoned carts to completed purchases per day.
  - The number of items per abandoned cart vs. completed transactions.
  - The profile of items abandoned versus purchased.
  - The profile of a shopper versus a buyer.

- Overall abandonment rate is the number of people who commence but do not complete the buying process
  - If the reason is a lack of qualification, you will need to adjust the mechanisms that attract people to your site.
  - If the problem is poor site navigation, a new site design may be in order.

Churn/Attrition

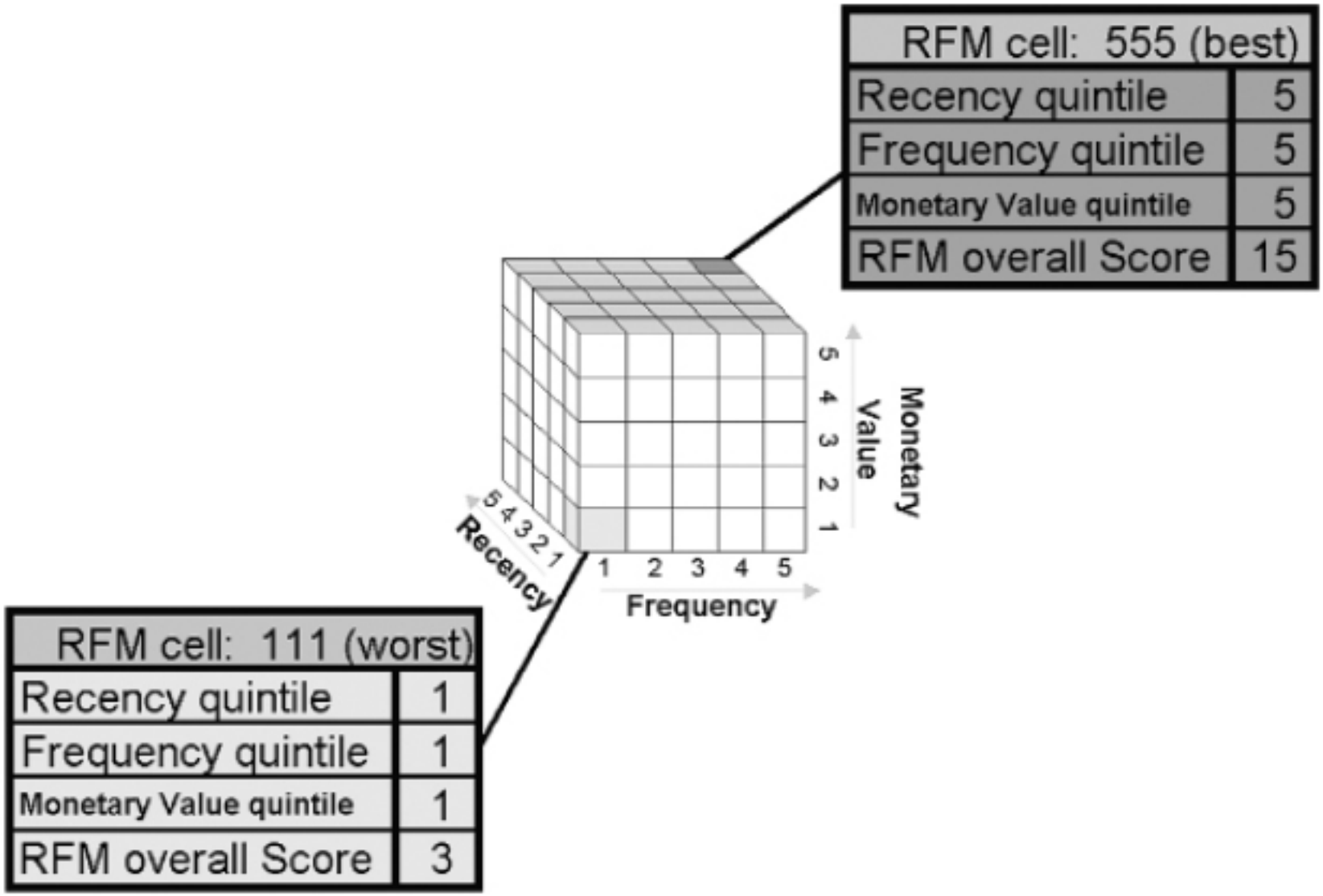
- Churn measures how much of your customer base ‘rolls over’ during a given period of time.
- flip side of retention and carries with it the same considerations regarding time scales.
  - If a customer does not buy a new car from you for three, four or five years, it could mean that she is now purchasing from your competitor, or it may simply be that she likes her current model.
  - If a music lover who buys CDs from your site on a weekly basis does not come by for a month, some sort of recovery action is in order.
- To calculate churn,
  - divide the number of customers who attrite during the given time period
  - by the total number of customers at the end of the time period.
    - Say you have 2,000 subscribers on the first of the month.
    - During the month you add 200 new subscribers.
    - You also lose 50 subscribers.
    - At the end of the month, you have 2,150 subscribers.
- Your churn rate is 50 divided by 2,150, which equals 2.3 percent
- Your growth rate for the month is 200 divided by 2,000, which equals a 10 percent

Best customer metrics

Recency, Frequency, and Monetary Value (RFM) analysis

RFM analysis helps to answer the most fundamental question in database marketing:

- Who are my best customers?
  - Using past transactions each customer is viewed simultaneously in three different dimensions:
    - Recency: Has the customer made a purchase — or visited your site — recently?
    - Frequency: How often has the customer placed orders — or visited your site — Monetary value: What is the customer's total spending and profitability?
  - Each dimension provides a unique insight about a customer's purchasing behavior:
    - Recency: Decades of statistical analysis have shown that customers who have made a purchase recently are more likely to purchase again in the near future.
    - Frequency: Frequent purchasers are likely to repeat purchasing into the future.
    - Monetary Value: Customers with high spending in the past might spend again in the near future.
- Dividing customers into a number of segments using RFM-based clustering methods helps
  - identify and profile customer segments that are not intuitively obvious or visible from reports,
  - yet represent significant opportunities.



Visualization of 125 RFM segments.

Promotion calculations

Promotion calculations

How many people did you reach with your message? How many of them came to your site?

Determining the monetary value of individual users includes accounting for the associated costs of getting them to your site and holding their attention. This cost is reconciled over the customer life cycle starting with the cost of the promotion that got them there, through the acquisition phase, and finally to the moment of conversion.

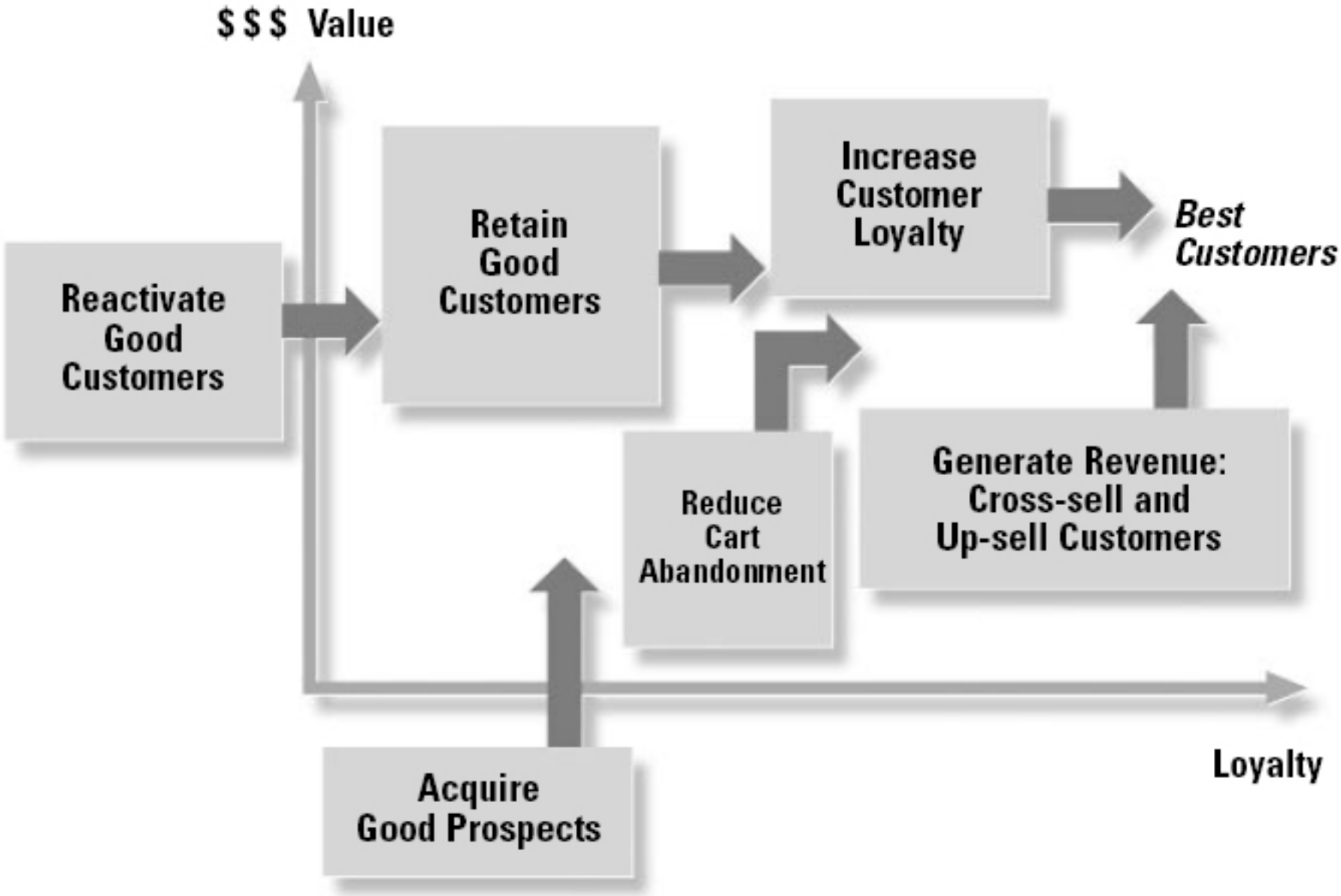
$$\text{Acquisition cost} = \frac{\text{Advertising and promotional costs}}{\text{Number of click-throughs}}$$

The acquisition cost calculation determines the value of a given promotional effort over a given period of time. If $25,000 spent on 1,000,000 banner ad impressions yields a 0.5 percent click-through rate, the result is 5,000 visits or $5.00 per user acquired. Another campaign draws a few more people and drives the cost per acquired user down to $3.50. If the goal is to acquire customers (generate visits) and nothing further, then the winning campaign is easy to spot.

$$\text{Cost per conversion} = \frac{\text{Advertising and promotional costs}}{\text{Number of sales}}$$

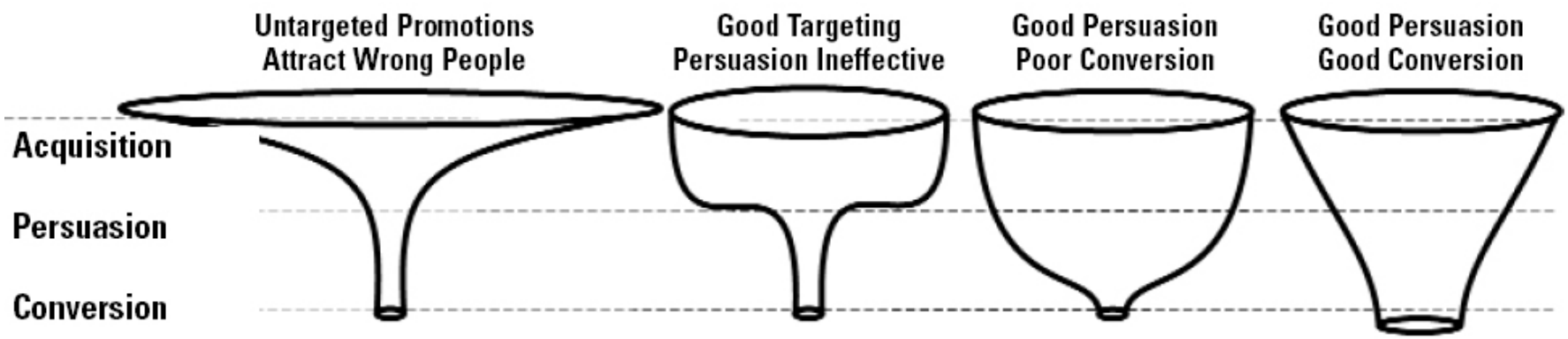
If you spent $25,000 on marketing programs, acquired 5,000 users for your efforts, and 5 percent of these prospects convert — resulting in 250 new paying customers — the cost per conversion was $100. This is good if you are selling real estate to high-income professionals but not sustainable if you are selling stationery to students.

The cost per conversion is the number that marketing people use to determine the best investment of their promotional budget. Spending $2 million on a Super Bowl ad campaign may seem like a large check to write. But if the resulting traffic and sales produce an acquisition and conversion cost below alternative means, the cost may not be so alarming.



Life time value optimization process.

4 Potential Customer Life Cycle Funnels



Four potential customer life cycle funnels.

Stickiness

Stickiness

An often discussed yet seldom-defined industry metric, stickiness is related to both duration and frequency. Stickiness is a composite measure that captures the effectiveness of your content in terms of consistently holding user's attention and allowing them to quickly complete their online tasks. In general, sticky sites are considered more effective than sites that are not very sticky.

Little consensus has emerged as to how to calculate stickiness and many stickiness formulas are potentially valid, actionable and consistent. Here is one stickiness formula that we feel is particularly succinct:

$$\text{Stickiness} = \text{frequency X duration X total site reach}$$

Where

$$\text{Frequency} = \frac{\text{Number of visits in time period T}}{\text{Number of unique users who visited in T}}$$

And

$$\text{Duration} = \frac{\text{Total amount of time spent viewing all pages}}{\text{Number of visits in time period T}}$$

And

$$\text{Total site reach} = \frac{\text{Number of unique users who visited in T}}{\text{Total number of unique users}}$$

The following example illustrates a typical stickiness calculation.

Your site has acquired a total of 200,000 unique users. Over the past month, 50,000 unique users went to your site. These 50,000 users accounted for a total of 250,000 visits (average frequency of 5 visits/unique user for the month), and — during these visits — the users spent a total of 1,000,000 minutes viewing pages on your site. Therefore:

$$\text{Monthly stickiness} = \frac{\text{250,000 visits}}{\text{50,000 active users}} \times \frac{\text{1,000,000 minutes}}{\text{250,000 visits}} \times \frac{\text{50,000 active users}}{\text{200,000 total users}}$$

$$\text{Monthly stickiness} = \text{5 minutes/user}$$

Example of a Balanced Scorecard for an eBusiness

Figure 12.2 Example of a Balanced Scorecard for an E-Business

Financial Metrics	*Customer Metrics*	*Internal Process Metrics*	*Learning and Growth Metrics*
• Online revenue per customer	• Level of service delivery	• Availability of systems	• Staff productivity & morale
• Cost per online customer	• Satisfaction of existing customers	• Volume of transactions processed	• # of staff trained in new services
• Cost-efficiency of e-business processes	• # of new customers reached	• # of errors	• Value delivery per employee

Sources of Data

- **Customers**
- **User-Stored Data**
- **Server-Stored Data**
- **Infomediaries**

Customers Are the Primary Source of Data

- **Users Browsing Site**
- **Users Clicking on Ads**
- **Users Interacting with Surveys/Polls**
- **Shoppers Making Product Selections**
- **Users Filling Out Forms**
- **Shoppers Making Purchases**
- **Shoppers Contacting Customer Service**

User-Stored Data

- **Clickstream**
- **Cookies**
  - **“light” authentication information**
  - **Personalization data**
- **Web Bugs**
- **Client-Side Wallets**
  - **e.g. Microsoft Wallet (part of IE 4+)**
  - **Address Information**
  - **Payment Information (Credit Card #)**

Server-Stored Data

- **Web Server Log files**
  - **Text File stored in the Web Server. Every line represents a "hit"**
  - **Contains: HTTP request, date, time, OS, Browser Type, Referrer URL**
- **Server-Side Wallets**
  - **e.g. Microsoft Passport**
  - **Allows storing address/payment information**

- **Transaction Database**
  - **Contains a record of all transactions, including products purchased, amounts transferred, etc.**
- **User Profile Database**
  - **Contains data about registered visitors and shoppers**
  - **Explicit Data: data inserted by the user (through forms or from Wallet)**
  - **Implicit Data: data inferred by analysis of user's behavior**