



E-Metrics

Business Metrics For The New Economy

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Executive Summary

Driven by the clear need for precise, informative indicators of e-business success, NetGenesis and Target Marketing conducted extensive interviews with senior executives from leading Web sites to uncover current best practices in e-business measurement. This research revealed that while all e-business managers clearly recognize the tremendous value of e-customer analytics, most lack the staff, technical resources, and expertise to harness and put to effective use the flood of raw data produced by their Web systems.

By correlating these research conclusions with the online customer life cycle model, this paper offers the first set of 'e-metrics' aimed at providing Web site managers new, fundamental insights into their e-business. New e-metrics introduced include the *Personalization Index*, *Stickiness*, *Seducible Moments*, the *Freshness Factor*, and more.

This document covers three major areas:

- Sections 1-3 explore the challenges facing today's e-businesses, how metrics are critical to business success, and discusses the research methodology.
- Sections 4-8 present the research results and conclusions, introduce the customer life cycle, and explain each stage of the life cycle in-depth.
- Sections 9-13 offer an innovative set of readily applicable, useful e-metrics (including appropriate mathematical formulas), discuss the ramifications of these metrics, and provide recommendations for e-businesses looking to realize significant competitive advantages and cost savings through the application of these e-metrics.

Additional e-metrics information, references, and discussion forums are also available on the NetGenesis Web site at <http://www.netgen.com/emetrics/>.

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Section 1: Introduction

Traditional management adage: You cannot manage what you do not measure.

E-Business addendum: You cannot measure what you do not define.

Defining specific metrics for measuring the success of a Web site is a daunting task. The inability to identify proper criteria and meaningful calculations is hampering the e-business world's capacity to determine the value of corporate Web sites and to set appropriate budgets for their development.

Background

Senior executives in today's cutting-edge e-businesses face intimidating new challenges as the Internet community races headlong into the new millennium. These executives have labored to build highly dynamic, heavily personalized, customer-centric e-commerce destinations that are a far cry from the static 'brochure-ware' Web sites of 1996. Today's top sites strive to establish true one-to-one relationships with customers, often generating unique site experiences for each and every user.

As the Web makes good on the oft-repeated promise of providing a fundamentally new customer communications channel — and as e-business managers travel further into the realm of the unexplored — both day-to-day tactical execution and long-term strategic vision become more challenging and more critical.

However, e-business managers lack many of the core tools and techniques for successful management. What types of customers are driving profitability? Which Web technology investments yield the greatest return on investment? How can we best respond to new and potential competitive threats?

In bricks-and-mortar businesses, senior managers have a significant arsenal of fundamental metrics that reveal major trends, key opportunities, and hidden hazards. These executives can "manage by the numbers" to confidently plot strategy and navigate through unfamiliar and volatile business conditions. Unfortunately, e-business executives — faced with more unfamiliar and volatile business terrain while embracing new techniques like one-to-one personalization and viral marketing — have comparatively vague measures on which to base their decisions.

Major Research Findings

We interviewed managers from 20 leading e-businesses in efforts to uncover two key insights:

- What e-metrics are e-business managers tracking today?
- What e-metrics and success-tracking techniques do these managers expect to implement in the future?

Very little detailed market research has been conducted and published on this subject, so the results proved enlightening. Several themes were consistently repeated throughout the interviews:

- Web managers are inundated with data.
- Web managers know the data contains immensely valuable information.
- Web managers are stymied in their desire to access that information due to a lack of
 - People.
 - Resources.
 - Standard definitions.
 - Domain expertise.

Web systems clearly produce a great deal of data about user activity, but virtually no rich, actionable information. The Web managers we spoke with know that the intelligence they need is buried within the data they collect, but they do not have the definitions, methods, or means to unearth it effectively.

Nearly all of the site managers were adamant in their desire for a common language to describe their e-business results. They spoke of the need for common terms and common measurements. They expressed their frustration in not being able to get at the information they know is sitting in their customer behavior data files, and not being able to correlate that information with the available wealth of off-line information.

At the same time, they expressed their optimism about the future. Each manager has a vision of what could be learned from the information they already had and might collect if only they had a few more resources and a little more support from upper management.

Enter E-Metrics

The business community knows how to measure income and profits and the proverbial "bottom line," but is still struggling with what we call 'e-metrics'—metrics for measuring Web site success. As an industry we have identified a variety of measurements that give us specific counts of particular elements, but these alone do not add up to a clear and comprehensive picture of success. The time has come to quantify aggressively what is and is not working in the Internet economy.

In working with clients on a day-to-day basis, we have encountered a great deal of frustration and promise about measuring the value of a company's Web efforts. From a desire to help Web-enabled companies quantify their progress, we interviewed 20 leading Web site managers. In the process of these interviews, their frustration crystallized into a cry for help. When asked the biggest problem facing her organization, one manager told us:

"A lot of e-commerce companies just really don't know how to measure their businesses right now. Nobody really knows because the industry is so new that there isn't a standard of how to really measure your success and how to gauge your growth in the future. Is it going to be by your volume of ordering? Is it going to be by your repeat customers?" —(Retail company)

We also heard that the information that comes from the Web contains powerful business indicators. Another site manager told us:

"The corporate organizations that could sort of ignore the Web have now realized that it's creeping a little too close to the heart of their business, so they're getting much more involved in the process." —(Technology company)

The study and definition of e-metrics is a new subject that we are just beginning to explore. Many e-businesses have barely begun to develop new measures for understanding their performance and success. In fact, most Web sites are struggling with basic concepts like hits and page views and visits, let alone something as involved as loyalty or the shape of their lead qualification funnel.

At the same time, every company is actively seeking out new innovations and approaches that create competitive advantage. Those organizations at the forefront of metrics development will consistently make better tactical and strategic decisions, and consequently out-innovate and out-manage the competition. If you are looking for that competitive edge, and want to learn about the techniques that will yield key insights into your e-business, read on.

We Dedicate This Report to You

This research study is dedicated to all those in the boardroom contending with large e-commerce issues, all those in management positions wrestling with budget constraints, and all those on the front lines who are working long and hard putting forth sincere effort, but struggling to calculate the value of their contributions.

It is our aim to identify the most important e-metrics and to show how they are derived. In doing so, we wish to lend a hand to those who are saturated with surplus statistics, mystified by a multitude of measurements, and perplexed by a plethora of possibilities.

1

Since I've got all these things I can measure, I'm paralyzed by all the opportunities. —(Service company)

We created this document for those directly managing Web sites at large companies and other Web-enabled firms. These are the leaders in their fields who need the best Web intelligence possible: the men and women who are trying to measure now what the rest will be measuring in due time. These managers live and breathe the new concepts of click-throughs, page views, cookies, clickstreams, attrition, and abandonment.

Section 2: Traditional Business, E-Business, and Metrics

E-business is constantly generating new business models, new types of partnerships, and new ways to succeed. To keep up, companies require new metrics — e-metrics — to calibrate their success. Indicators of e-commerce effectiveness are necessary to reveal whether a firm's 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?

Before we delve into these challenging new questions, we'll quickly recapitulate the traditional starting point.

Traditional Business Metrics

Financial reports provide a steady stream of computations by which companies can compare performance from one period to another, one company to another, and one company to an entire industry. These reports contain metrics for many types of calculations.

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

Generally accepted accounting principles operate through fundamental systems of managerial accounting to capture, record, analyze, and interpret a company's health. These appraisals serve as an organization's x-rays, ultrasounds, and EKGs to give management a clear, numeric model of a company's fitness.

Without such metrics there would be no way to determine whether a company is larger or smaller, faster or slower, better or worse. At a more detailed level, these numbers allow one to spot anomalies by correlating revenues to cost of goods sold show if a company's sales trends are out of proportion to its earnings. Is a company's debt working for it or against it? How do its earnings per share stack up against the competition?

Modern accounting practices have been standardized and carefully honed for hundreds of years. They are tried, true and trusted; they have become a way of business life. But business is changing. Navigating by landmarks alone was insufficient when man began plying the seven seas and a new vision of a round world was required and new tools were necessary to traverse the open ocean successfully. Those without the vision and the tools perished in their attempts.

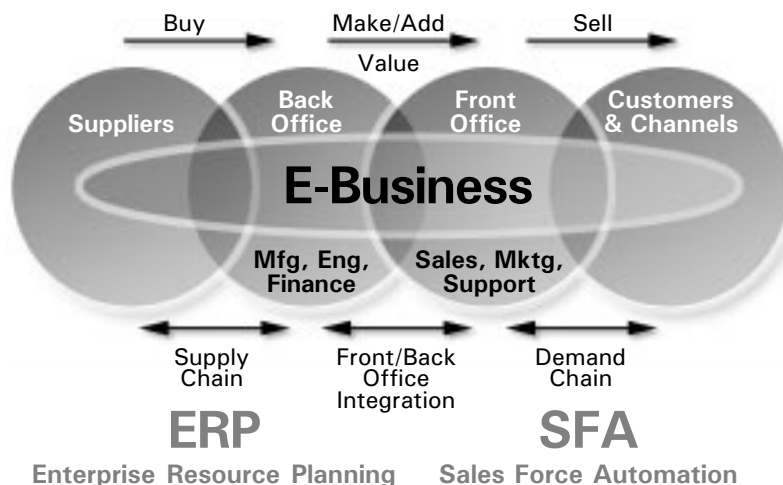
Decomposing sales and buyer data to gain a better understanding of the way visitors behave is even more important on the Internet than in the bricks-and-mortar world.

— 'A Matter of Metrics: Using Web Data to Improve Sales Performance', <http://knowledge.wharton.upenn.edu/articles.cfm?catid=4&articleid=162>

E-Business Is Fundamentally Different

Why did inexperienced, unprofitable Internet companies have such high market valuations? Because Web-enabled companies have the potential to reach millions of customers. Because they can dramatically lower the cost of doing business. Because they can connect buyers and sellers more efficiently than ever before. Because they represent a whole new way of doing business. But as Figures 1 and 2 illustrate, the technology underpinnings of e-business are both pervasive across the enterprise and representative of fundamental discontinuity in the core business technology platform. At its most basic levels, e-business spans all major business processes and thus necessitates integration of an enterprise's entire technical infrastructure.

Figure 1:
E-Business
Across the
Enterprise.

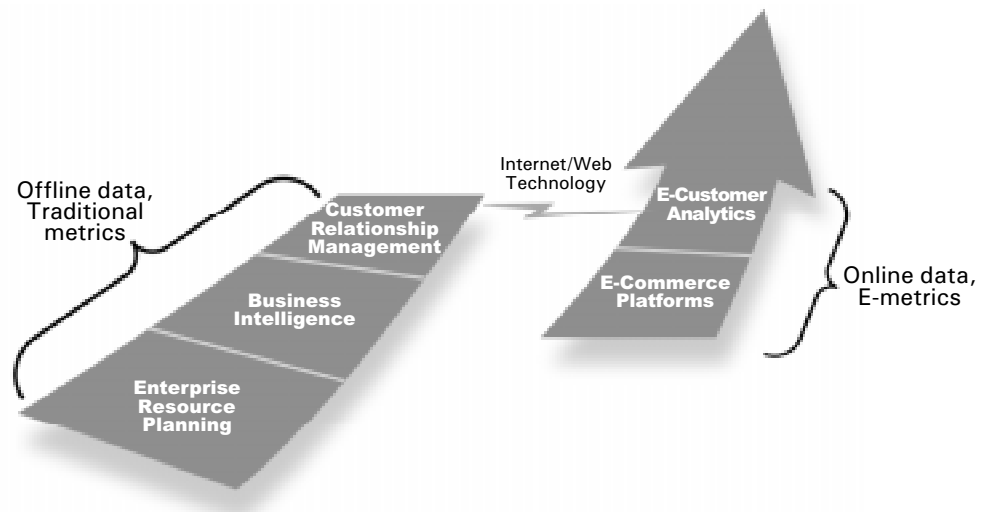


2

Section 2: Traditional Business, E-Business, and Metrics

A store in Roundup, Montana can only cater to about 2,000 individual citizens and the handful of tourists passing through, while a Web site can be reached by literally hundreds of millions. A fork lift parts dealer in Barstow, California has a limited number of business customers to sell to. Yet that same dealer's Web site can sell forklift parts across the country and around the world.

Figure 2:
From ERP
and CRM
to E-Commerce
and
E-Customer
Analytics.



“Always Open” used to be the exclusive property of coffee shops and laundromats. Now nearly every company can — and must — operate 24 x 7 x 365.

Creating relationships with cooperative marketing partners used to require a vice president of business development. Now every Web site can have an affiliate program. Communicating long-distance with prospects, customers, and vendors used to require a significant commitment to odd hours to accommodate multiple time zones, an investment in long-distance phone services, and an ability to tolerate airline cuisine. Today, twenty dollars a month buys all the email you can send and receive.

E-business is real-time business and the indicators of marketplace trends are recorded as they happen. A banner ad placed on a portal site generates click-through statistics within seconds. An improvement in the navigability of your Web site instantly changes shopping cart activity. A press release that used to take weeks to have a barely perceptible effect on your company's brand and bottom line now can impact your market's propensity to buy within hours.

The reason so much attention has been focused on the Internet is not that it is the playground of a handful of esoteric dot-com companies. Rather, it is because it has become a platform for all business. Whether you sell semi-tractor-trailers or semiconductors, music CDs or mule feed, digital signatures or diaper services, there is a way to conduct business on the Internet that will provide a significant return on your investment through increased sales and decreased costs.

Finding those sales and savings is a matter of common sense, experimentation, and paying close attention to the results you get in the process, in as close to real-time as possible.

One diagram (Figure 3), excerpted from Peter Stevens' 1998 CRM forum presentation (www.crm-forum.com/crm_forum_presentations/target/ppr.htm), succinctly illustrates a core difference between e-business and traditional business: timescale. Where traditional marketing managers are concerned about promotion cycles measured in months, e-marketing managers are more likely to perform this kind of analysis on a daily — if not hourly — basis.

Figure 3: Feedback Cycles in Traditional Business.



Brick-and-Mortar Metrics are Growing Up

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

Using store maps and video cameras, Underhill made the store his laboratory and became a noted retail anthropologist. He determined nuances such as the effect of signage on the likelihood and dollar amount of purchases and why pet food should be stocked on a low shelf but larger-size men's underwear should not.

This brute force analysis brings to light the daily doings of typical consumers. Even more sophisticated mathematical methods are shining a high-intensity beam on customer behavior, turning general assumptions and hypotheses into predictors and prognosticators. Organizations are turning away from standard metrics like days sales outstanding (DSO) towards customer-centric metrics like retention and cross-sell rates.

2

Section 2: Traditional Business, E-Business, and Metrics

This broad transition to a 'customer economy' is apparent even at an individual transaction level: if you have ever been asked for your mother's maiden name while using your credit card for a larger-than-usual purchase, you have been detected by software that sifts through thousands of records in tenths of seconds to determine if this purchase is too far outside your normal purchasing routine. Credit card companies also make use of sophisticated software to determine which customers are most likely to cancel their accounts. That information directly affects the routing of incoming phone calls to special representatives trained in the arts of customer retention. The software also selects and suggests the offer most likely to keep that particular customer.

There is no doubt that the business world is shifting focus away from production, distribution, and increasing market share toward focusing on customers' needs and gaining wallet share. With the Internet lowering the cost of switching from one vendor to another, and with the ability to customize the Web experience for each site user, this focussing on the customer becomes mission critical.

Section 3: E-Metrics: The New Breed

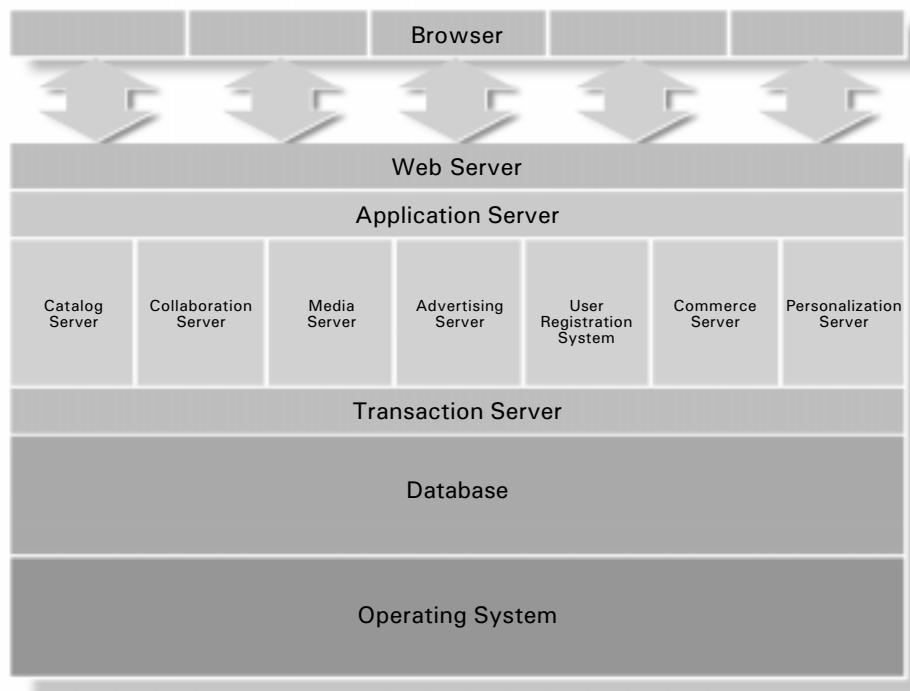
The Herculean efforts that Mr. Underhill’s organization undertook to collect retail store behavioral data are greatly reduced online. For both anonymous and identified interactions, Web servers and e-business systems collect detailed customer behavior data automatically. By recording every click at every moment, we can make the data points generated by a visit to a Web site available to those wishing to put them to use. Further information can be gleaned from third-party panel measurement services as well as from explicit site-based surveys. For instance, the highly evolved software used for credit fraud detection is now being applied to analyze how site users look for information, how they make buying decisions online, and what makes them click the “purchase” button.

As a result, we are able to paint a richly detailed portrait of prospects and customers, and can determine how to get more of the former to become the latter. By following each prospect through the customer life cycle, we are able to determine

- Which advertising is the most effective.
- Which types of prospects are most likely to buy.
- Which offers will have the highest impact on which prospects.
- Which customers will be the most profitable over time.

Missing, however, is a fundamental understanding of how the measurable elements of e-commerce can be transformed into tangible, actionable online business intelligence. The need is glaring, since the information collected from Web sites is critical to the core business channel. Figure 4 shows that e-metrics are derived from the complex, heterogeneous e-business systems that characterize the one-to-one infrastructures of today’s dynamic e-commerce destinations.

Figure 4:
Modern
E-Business
Software
Infrastructure.



3

Section 3: E-Metrics:
The New Breed

"I think that our [Web] marketing database will actually become the marketing database of the company. We won't be supporting — we will be the keynote marketing database because more and more business will be on [the Web].

— (Service company)

This tidal wave is only a gently rolling surf at the moment. "Dot-com" companies grasp the value of squeezing every drop of understanding from the deluge of data they are collecting. Other firms — large companies with only a toe in the water — are just now learning the fundamentals of e-business operations. These larger enterprises are facing rough seas in terms of leveraging customer data due to their relative lack of domain expertise, monolithic legacy systems, and a reluctance to embrace the Web as a critical business tool.

"More people need to understand the basics of Web traffic. It needs to have as much importance as traditional accounting has in businesses. The Internet is important to a company, and this traffic should be as closely monitored as traditional accounting books." — (Publishing company)

Research Methodology

We began our research with general, printed questionnaires handed out at trade shows and industry conferences. The response made it obvious that we had touched a nerve. People were keenly interested in learning the results of those surveys and were very eager to participate. The results confirmed that the majority of people running Web sites are frustrated that they do not have a better handle on what is happening on their sites. They are looking for answers.

This led to a change of direction in our methodology. We abandoned the mass-market, quantitative approach and decided to go right to the top. We spoke with 20 senior managers at some of the world's leading Web sites to find out what they are doing today, what they plan on doing tomorrow, and where they would like to be in the future. In selecting our research participants, we were careful to interview both well-known and up-and-coming e-businesses across multiple sectors including e-retail, business-to-business, financial services, and publishing.

Survey Participants

These are the organizations at the front line that are creating the Web on a daily basis. The people responsible for these firms' sites shared their experiences, perceptions, and Web acumen to help us get a closer look at the e-metrics they manage today and will manage in the future. We are very grateful for their participation.

Table 1: Participating organizations.

Company	Primary URL	Description
365 Corporation plc	www.365.co.uk	365 is a leading multi-platform digital media company, offering content, community, and communication services to both consumers and small medium-sized businesses in a number of different languages.
Barnes & Noble	www.bn.com	Since launching its online business in March 1997, barnesandnoble.com has become one of the world's largest Web sites and the fourth largest e-commerce retailer, according to Media Metrix. Focused largely on the sale of books, music, software, magazines, prints, posters, and related products, the company has capitalized on the recognized brand value of the Barnes & Noble name to become the second largest, and one of the fastest growing, online distributors of books.
BBC ONLINE	www.bbc.co.uk	BBC ONLINE is the British Broadcasting Corporation Web site with more than 200 sites and some quarter of a million individual pages. BBC ONLINE is a gateway to BBC news, information, sport, and education supplemented by relevant BBC audio and video material.
Charles Schwab	www.schwab.com	The Charles Schwab Corporation, through its principal operating subsidiary, Charles Schwab & Co., Inc., is one of America's largest financial services firms. As of January 2000, the company served 6.7 million active accounts with \$718 billion in customer assets.
Fidelity Investments	www.fidelity.com	Fidelity Investments is the nation's largest mutual fund company and a leading provider of financial services. As of January 31, 2000, Fidelity had total managed assets of \$929 billion.
Foofoo.com	www.foofoo.com	Foofoo.com is a privately-held company creating a new model for destination sites online, leveraging well-known brands and aggregating content, commerce, and advertising to create the leading site for upwardly mobile individuals.

3

Section 3: E-Metrics: The New Breed

Company	Primary URL	Description
Freeserve	www.freeserve.co.uk	Freeserve is the leading UK Internet service that delivers free Internet access and, as a portal to the Internet, an integrated offering of UK-focused content, e-commerce, and services. As of 2 January 2000, Freeserve had 1.675 million active registered accounts.
Gomez.com	www.gomez.com	Gomez Advisors is a premier e-commerce portal provider supplying matchmaking services for B2C and B2B e-commerce.
iVillage	www.ivillage.com	iVillage.com: The Women's Network is the leading women's network providing practical solutions and everyday support for women between the ages of 25 and 54.
iXL	www.ixl.com	iXL helps businesses identify how the Internet can be used to their competitive advantage and uses its expertise in creative design and systems engineering to design, develop, and deploy advanced Internet applications and solutions. iXL Enterprises, Inc. has over 20 offices in five countries.
MapInfo	www.mapinfo.com	MapInfo Corporation enables customers to use location to transform information into business advantage. A global company and technology leader, MapInfo provides business intelligence solutions that are deployed across organizations to help them better understand their markets and customers.
MicroWarehouse	www.microwarehouse.com	MicroWarehouse, Inc. is a multi-billion dollar specialty catalog, online retailer, and direct marketer of brand name personal computers, computer software, accessories, peripherals, and networking products to commercial, education, government, and consumer customers.
MSN/Microsoft	www.msn.com	Microsoft's goal is to make MSN the most useful network of services on the Internet. In addition to integrating its own category-leading services into a comprehensive network, MSN is committed to working with leading content providers to give customers easy access to the information they are looking for.
National Semiconductor	www.national.com	Combining real-world analog and state-of-the-art digital technology, National Semiconductor's chips lead many sectors of the personal computer, communications, and consumer markets. National Semiconductor reported sales of \$2 billion for its last fiscal year and has 10,500 employees worldwide.

Company	Primary URL	Description
OurHouse.com	www.ourhouse.com	OurHouse.com is the first online destination to provide quality, comprehensive home improvement products, services, and how-to information. Partnered with Ace Hardware, OurHouse.com offers consumers access to more than 30,000 products.
PriceWaterhouse Coopers	www.pwcglobal.com	PricewaterhouseCoopers is the world's largest professional services organization. Drawing on the knowledge and skills of more than 150,000 people in 150 countries, PricewaterhouseCoopers helps its clients solve complex business problems and measurably enhance their ability to build value, manage risk, and improve performance in an Internet-enabled world.
Red Herring	www.redherring.com	Red Herring Communications is an integrated media company that provides strategic technology business information to the leaders of technology-driven businesses. Today, Red Herring Communications produces, distributes and broadcasts its unique blend of news, commentary and analysis online, in print, through events, and on television.
RedRocket/ Nickelodeon Direct	www,redrocket.com	RedRocket.com is the toy store developed by Nickelodeon Online. Nickelodeon Online's mission is to bring together all forms of broadcast and communication through the Internet to empower kids. Nickelodeon Online is a unit of Viacom's MTV Networks Online and is headquartered in New York.
T.Shipley	www.tshipley.com	T.Shipley is a leading high-growth, e-commerce company marketing to the business professional. T.Shipley is the premier provider of executive gifts, fine business products and services, and personal accessories that make the business professional better, faster, and smarter. T.Shipley sells to both the business-to-business and business-to-consumer market through the Internet, print catalog, and in Skymall in-flight catalog.
Travelscape	www.travelscape.com	Travelscape.com is the only major travel site developed by an experienced national wholesale tour and travel company. Travelscape.com is ranked as a top online travel provider by independent consumer advisory service BizRate.com.

Section 4: Industry Interviews: The Technology

Standard Definitions of Core Measurements

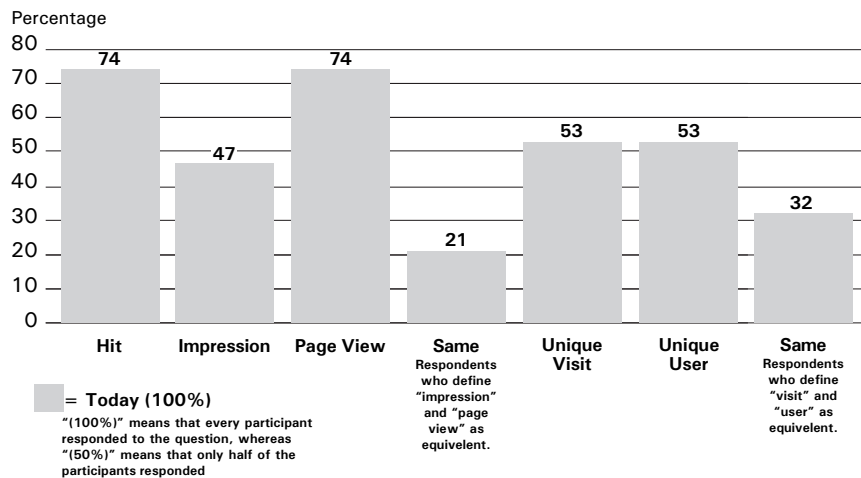
"The industry as a whole desperately needs a standardization of terms. It just doesn't exist at all." — (Service company)

If we are to have common measures and comparable e-metrics, standard terms are a must. If we are to communicate clearly about the fruits of our success and the lessons of our setbacks, recognizing standard measurements is imperative.

"I think (we're suffering from) the lack of standards out there. You talk about consistency within a company, but that doesn't mean that there's consistency out there. Things need to get more standardized in the way sites are built, the way they're tracked, everything." — (Retail company)

While most e-businesses have standard terms for hits and page views, only half have the same level of confidence when discussing visits or users (Figure 5). Encouragingly, relatively few e-businesses are confusing page views with ad impressions, or visits with users.

Figure 5:
Percentages of E-Businesses with Standard Definitions for Each of the Core Measurements.



While the industry at large is struggling with a common vernacular to compare one company's Web site to another, most firms are having trouble trying to communicate internally. The seemingly harmless discussion of "what is and is not a page view" between two technically adept Web professionals can grow contentious as hairs get split. Does a page merely have to be requested or actually delivered? How do you account for frames? What about resources without a 'typical' extension like '.htm,' '.asp,' or '.cfm'?

The good news is that 74% of the organizations we talked with have an internal standard definition for a page view. Many e-business feel they have a good grasp on the basic concepts of hits, page views, and impressions. The bad news is that only half have a standard definition for visits or users.

Why is this bad news? Because this analysis is about understanding customers, not page views or hits. Yet these are related, as illustrated in Figure 6:

Figure 6:
The Hierarchy
of Web Site
Activity.



- A customer (person) uses your Web site. He or she 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 he or she reviews. Thus each visit is composed of a time-ordered series of 'page views', otherwise known as a 'clickstream' or 'click path'. Note that — more frequently than many sites would like to admit — a visit can involve only a single page view.
- 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.

Make sure that your business has standard internal definitions for hits, page views, ad impressions, visits, and users. Document these standards so that they can be referred to and updated as needed.

At the lowest levels, you can only understand your customers by piecing together all of their hits, carefully extracting the page views, grouping the page views into individual visits, and attributing the appropriate visits to unique users. This presents significant challenges because calculating visits and users is significantly more subtle and complex than counting page views.

As a result, a large company without a standard definition for visits or users is likely to be using many different techniques for arriving at these measures. When the results are brought together for comparative purposes, it becomes especially difficult to tell what is really going on. Are the differences reflective of actual customer behavior or are they due primarily to different measurement methods?

For more detail on how a massive amount of raw hit data can be boiled down to a small handful of loyal customers, see Figure 8 on page 18.

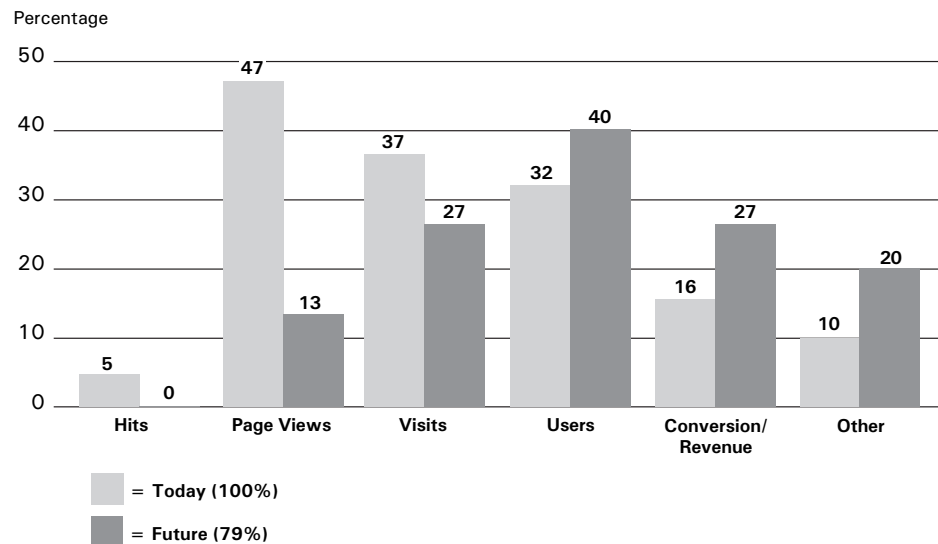
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Section 4: Industry Interviews: The Technology

The Primary Measurements

Page views were the most common measurement for nearly half of the respondents, though better than 30% considered visits or users to be their primary measure (Figure 7).

Figure 7:
Evolution of Primary Measurements



While page views are the predominant primary measure today, e-marketing managers do not expect this to be the case in the future. Instead, visits, users, and revenue measures will dominate.

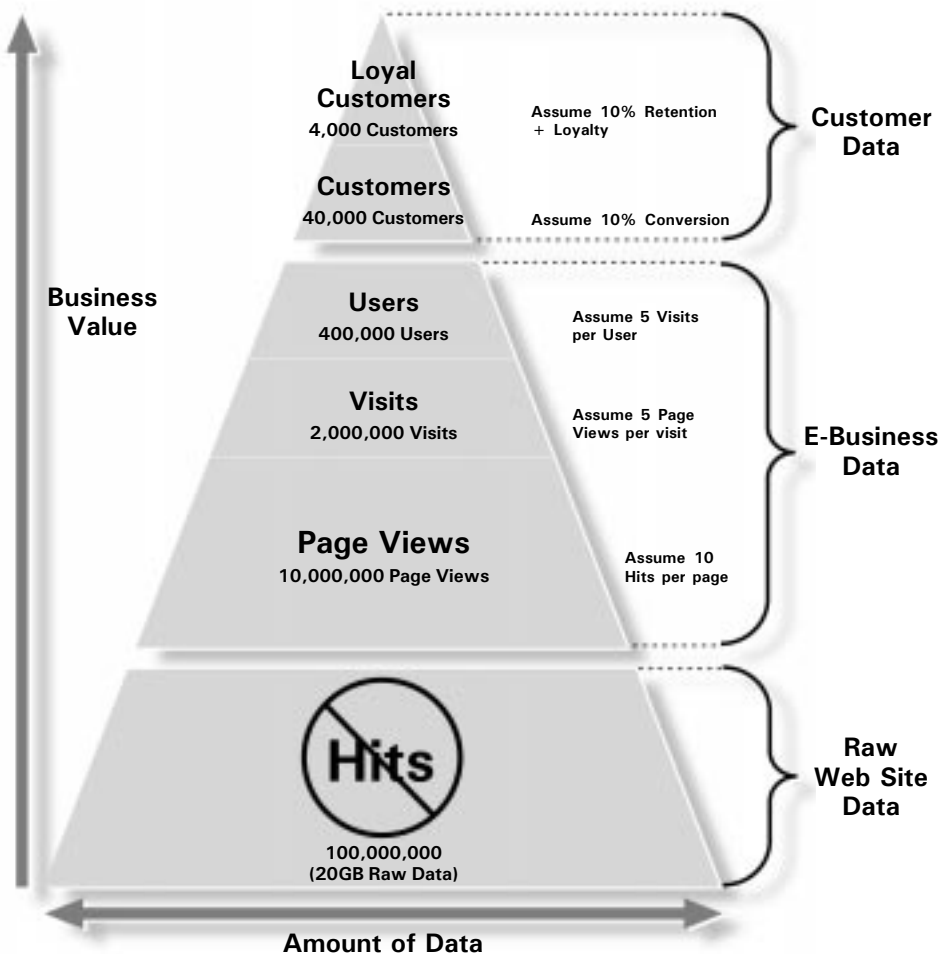
In stark contrast to the thinking of only a few years ago, just one site considered hits to be a primary measure. In general, there was ready agreement that hits — while of limited use for IT capacity planning — are a poor yardstick of customer behavior. It is essential to remember that the number of hits a site receives has more to do with page design than human traffic.

If we step back a moment from the survey results, a hierarchy of e-metrics begins to emerge from the dual considerations of data volume and business value:

- **Data Volume:** E-business systems produce a staggering amount of raw transaction data, the vast majority of which is hit data. While of little intrinsic value for marketing analysis, hits act as the 'phytoplankton' for the e-customer intelligence ecosystem. Hits are the bottom of the e-metrics food chain, forming a very broad foundation for higher-level, more complex metrics such as users or customers (and potentially households or companies).
- **Business Value:** The storage of hits requires huge volumes of disk space and presents data management nightmares, but offers little in terms of readily actionable information. Not only are user and customer data easier to manage physically, they are substantially more actionable from a management perspective.

As business value increases, the amount of data that must be managed diminishes dramatically. As you move up this value pyramid (Figure 8), you become increasingly focused on the activities of individual customers. However, the only way to arrive at these customers' activities is to start by sifting through the initial raw data set.

Figure 8: Relationship Between Data Volume and Customer Knowledge.



As noted above, hits are a poor measure of business performance because they reflect site design, thus failing to adequately reflect customer behavior. Hence, hits should not be used as a core metric for measuring success.

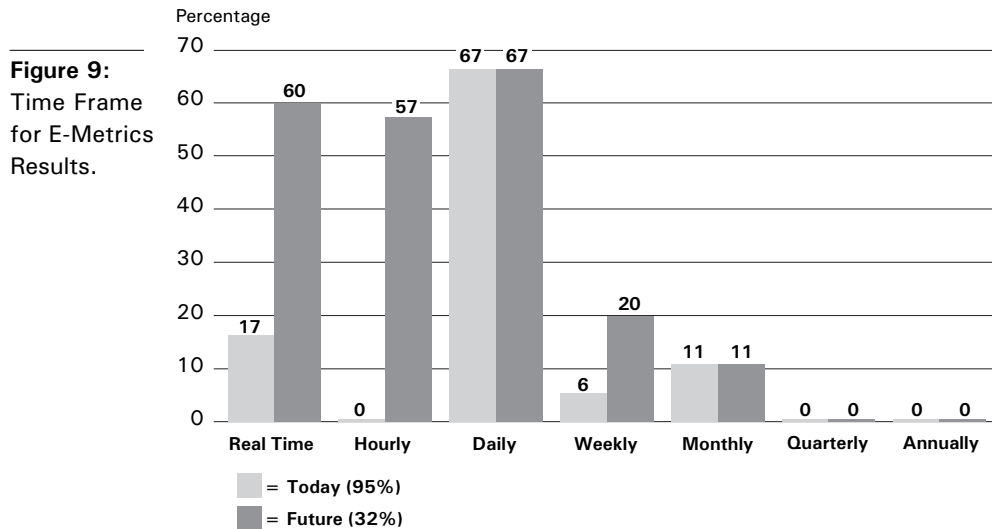
At the end of the day, however, raw hit data is a necessary evil in a true one-to-one, customer-centered economy. Why? Because while intelligent sampling techniques can be used to predict that you have approximately 4,000 loyal customers, sampling — by throwing out raw behavior data — will not allow you to locate the unique identity of those crucial, loyal individuals. Knowing that some percentage of your 2,000,000 visits comes from loyal customers is little comfort if you are unable to engage each of those customers in a meaningful, personalized, interactive dialog.

4

Section 4: Industry Interviews: The Technology

The Real-Time Horizon

While so much of e-business relies on reducing turnaround time from months to weeks to days to hours — or less — very few sites are reporting on that data weekly. A surprising number are performing some operations on a monthly basis (Figure 9). In all, the majority of sites report metrics data on a daily basis, with a handful reporting in real-time.



For those who did have a handle on their future data reporting plans (only 32% responded), there is a dramatic shift towards hourly — and even real-time — reporting time frames. This is indicative of the ‘instant response, lightning-fast’ mentality that pervades today’s e-business operating landscape.

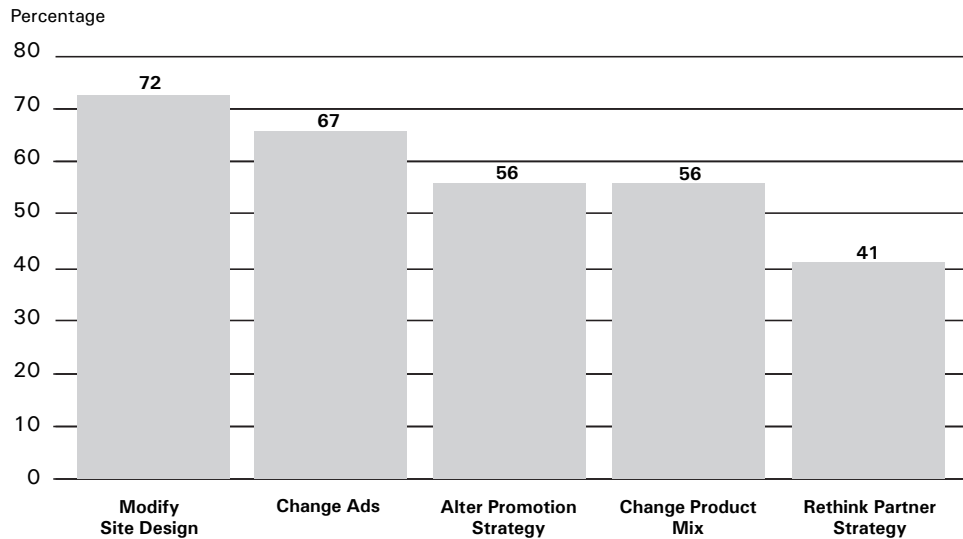
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Section 4: Industry
Interviews: The
Technology

Taking Action

The e-business managers with whom we spoke are certainly not strangers to taking action based on e-metrics (Figure 10). More than 70% said that they consistently alter their site design, while nearly as many modify their ad campaigns. This is not surprising, as site and ad changes are tactical in nature and can be made quickly. Fewer reported that they make more strategic changes in promotions, partnering, or product mix based on e-metrics results.

Figure 10:
Actions
Taken Based
on E-Metrics
Results.



The site changes that Web executives are ready to make revolve around serving specific content, advertising, and promotions to specific users based on ever-changing user profiles. As people's interests and behavioral profiles change, the Web site must keep pace or face losing its user audience. In time, our interviewees hope to see not just changes to their content, but more strategic corporate changes — like dynamically altering their product merchandising mix — as well.

Section 5: Industry Interviews: The Human Equation

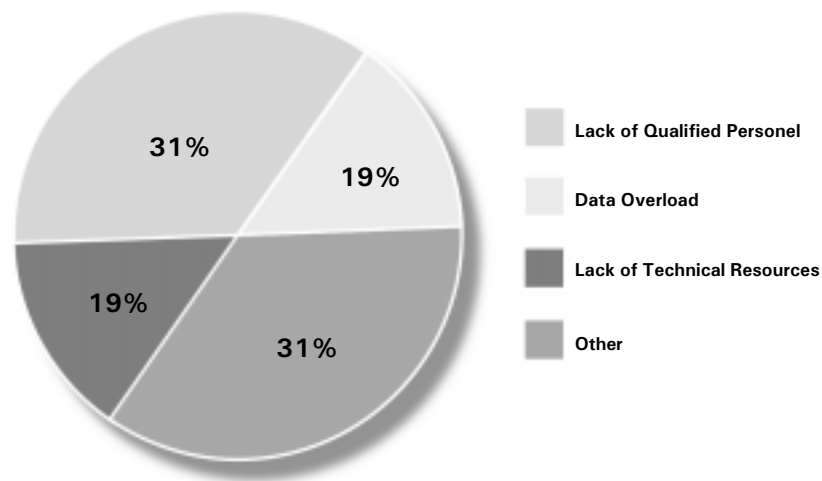
The survey process was designed to explore both technical and political aspects to the e-metrics challenge. Here we focus on the latter.

A Call for Help

What is preventing today's leading e-businesses from extracting maximum value from their e-commerce data? Three dominant factors emerged in our research (Figure 11):

- A lack of qualified personnel.
- An overload of information.
- A lack of technical resources.

Figure 11:
Primary
Obstacles to
Metrics
Development.



Lack of Skilled People & Technical Resources

While the lack of CPU power was lamented nearly as often as the lack of the right people to interpret the number crunching results, the lack of personnel is more urgent:

"People. Hiring the right people." —(Retail company)

"Resources. Available, Web-trained, talented resources." —(Publishing company)

With national unemployment near an all-time low and the need for people with Web knowledge and business savvy at an all-time high, this particular problem faces everyone trying to succeed online today. This pain becomes acute when compounded with the time pressure to deliver and act on e-metrics results.

"Another big problem is being able to react quickly to the data as far as having somebody own this stuff and being able to report and react to it on an as-needed basis. If that needs to be hourly, so be it." —(Retail company)

However, our interviews all revealed that finding the resources and hiring the people were well worth the effort.

Data Deluge

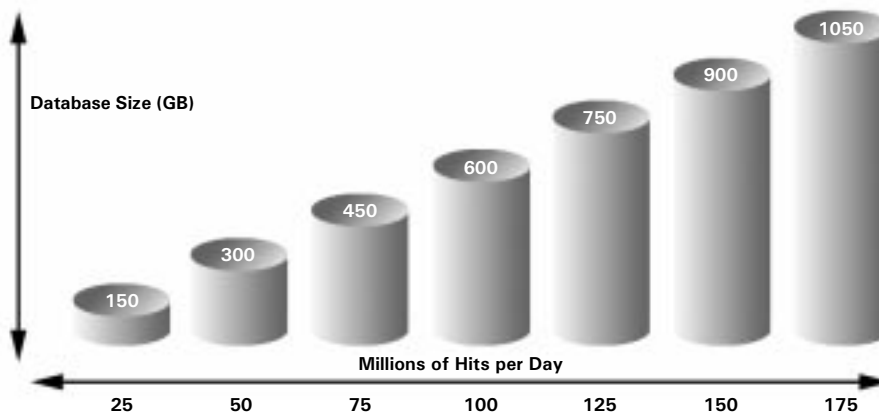
Every click leaves a record. Every page view makes its mark. All data entered by a user is recorded. While the result is a knowledge opportunity without equal, the practical result is an overwhelming amount of data (Figure 12). Most of our interviewees put it simply:

“The problem I have is I have too much data.” —(Technology company)

Some were a bit more colorful:

“I think working with this volume data is a bit like being in a canoe in front of a tidal wave — paddling like hell and just hoping it doesn’t overrun you.”
—(Publishing company)

Figure 12:
Database Size
as a Function
of Site Traffic
Volume.



Others put it into terms that bring the reality into sharp focus:

“It takes all day to process 14 million filtered URLs. It’s a million per hour that we’re hitting. So, by the time I get the data from 400 machines sewn together and filter out the gifs and the excludes and the impressions, it takes 14 hours to process.” —(Service company)

At a recent industry conference, Netscape webmaster Ohmar Ahmad revealed that serving pages is nowhere near as processor intensive as analyzing server results. Ahmad noted that Netscape sequesters its largest machines for thrashing through the massive behavior data files it creates every day.

None of the Web managers we spoke with expected to stem the tide of information influx. They simply lamented the lack of technical power to turn that data into information.

Worth the Trouble

The value of information regarding customers, products, and marketplaces is manifest. Every site manager is sitting on a potential gold mine of competitive advantage and knows it. This information is the bellwether for the entire corporation.

“Right now there is a growing demand to the point where people are banging on the door so that business decisions can be made based upon fact rather than fiction.” — (Service company)

The research participants clearly grasped that marketplace movements and customer attitudes can now be understood as never before. The potential to use this information is as unlimited and varied as the companies that put it to use.

“We use metric trends to predict future growth in the business which would lead to forecasting headcount and forecasting basically everything that goes with that, including property expansion.” — (Publishing company)

At several public seminars, National Semiconductor has described how Web site e-metrics impact its product development and stocking plans. When one of their sensors started getting more page views than usual, Phil Gibson, director of interactive marketing, suggested National Semiconductor increase production of specific components. Within weeks, orders for these components started to climb. Conversely, decreased Web attention now sets off warning bells within National Semiconductor’s production team and signals them to ease off in order to avoid inventory overages.

“(Web site metrics) will become more critical to decision-making. It’ll become more spread out throughout the organization. More of our line managers will become involved. There will be requests for more information.” — (Retail company)

With the increasing focus on e-customer relationship management (eCRM), integration of Web metrics with data collected at every customer touch-point is becoming more important. The Web is losing its distinction as a stand-alone, alternative e-universe where the rules of normal business do not apply. Instead, it is seen as integral to the future business environment.

“No longer are we going to be talking about Web centric metrics. We’re going to be talking about metrics with regard to all areas in which the customer interacts, whether that be through the Web, through a wireless application, or what have you. The ability to centrally go after cross-channel integration [and] cross-access is going to be huge.” — (Consulting company)

As online information is integrated with other customer information, the possibilities open for serious one-to-one interaction and a robust, dynamic, individualized Web experience for each customer.

There is strong desire to automate the integration of data from within the corporation, and the value from the customer's perspective is plainly visible. Customers do not want to fill out the same form more than once. They do not want to be pigeon-holed into a market segment. They are demanding to be treated as individuals and Web managers are anxious to comply.

"We'll be smarter about targeting individual segments. I suspect we're going to become more dynamically reactive by letting the machines, based on our data, make changes to [our site]." —(Technology company)

"Creating specific content to what people do and not have a human do it is one of the biggest things we're shooting for." —(Retail company)

The clearest message we heard from our interviews was that knowledge about their individual customers is central to corporate success:

"We need to know our customer better. That's the name of the game. Anything and everything is pretty much useful, it's just a matter of putting it in an order that makes sense and is usable as an e-retailer." —(Retail company)

"Sales increases come from our growing ability to understand customer behavior online, make our products easier to find, and from tracking staffing requirements to save money in our call centers." —(Retail company)

"There will be more integration between the measurements driving work-flow events, and distributing information and action items based on the measurements. Web site data will start to have more filters in it to trigger alarms." —(Technology company)

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Section 5: Industry Interviews: The Human Equation

E-Metrics: The Future Value is Compelling

Clearly, businesses are investing heavily in their e-metrics infrastructure and capabilities. All suggested areas of future development received a better than 80% response rate (Figure 13).

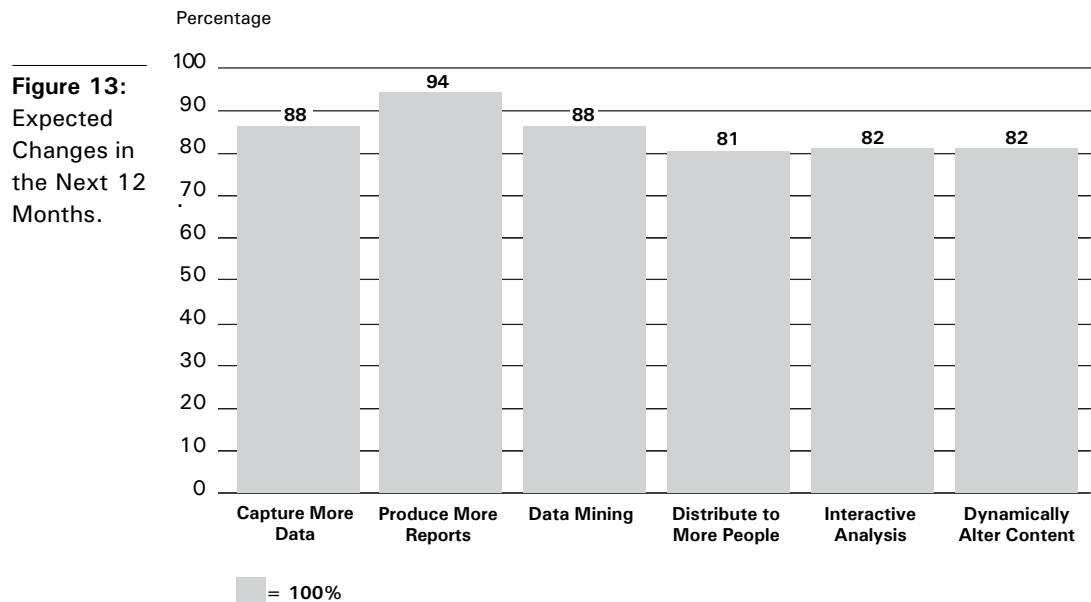


Figure 13: Expected Changes in the Next 12 Months.

All of the reasearch participants understand what they can do with the information they have—once they unlock it.

“It puts us closer to our users — and if you know what your users want, you’re better able to serve them.” —(Publishing company)

Section 6: The Customer Life Cycle

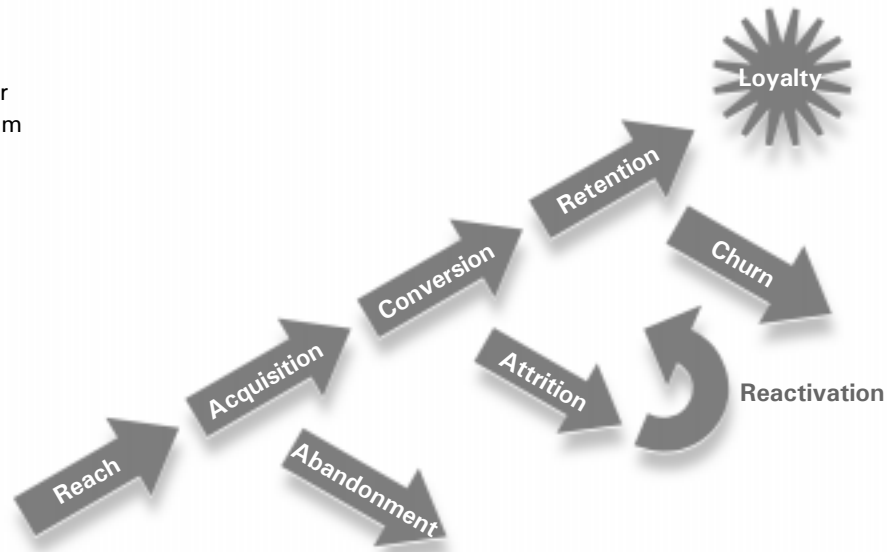
From the completed interviews, we learned not only where companies are today, but also what sort of measurements and e-metrics they need in the future. Those e-metrics revolve primarily around the customer and the customer life cycle.

Tracking the Customer Life Cycle

The overall business economy has shifted from process- or product-centric to customer-centric — and hence customer life cycle-centric. The problem in the online realm is that customers are invisible without clear definitions of a user or a visit. People come to your site, leave footprints, and move on. But those footprints are merely an indication that they were there and tell you nothing about the people who made those marks. Unless you know who are casual callers and who are loyal devotees, you cannot tell if your promotion and conversion efforts are working to your benefit or not.

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 (Figure 14).

Figure 14:
The Customer Life Cycle from Introduction to Loyalty.



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

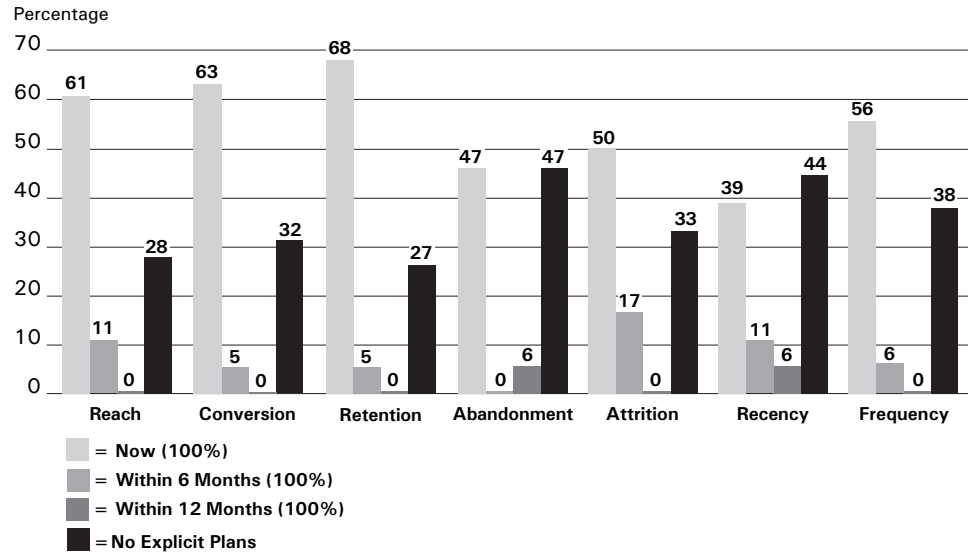
- Claim someone's attention.
- Bring them into your sphere of influence.
- Turn them into a registered and/or paying customer.
- Keep them as a customer.
- Turn them into a company advocate.

6

Section 6: The Customer Life Cycle

Our research revealed that many sites track multiple components of the customer life cycle (see Figure 15).

Figure 15: Customer Life Cycle Metric Tracking.



The lines between these various stages are drawn in different places at different companies and depend on the core business model deployed. Are you primarily selling products or services? Does a typical sale take 5 minutes or 5 months? Are you trying to convince users to purchase a mortgage or register for a personal home page? In a purely retail, B-to-C environment, the stages are typically much more clear-cut than in a B-to-B setting.

For instance, determining when a new customer becomes a retained customer at The Gap is a relatively straightforward exercise. Considerably more ambiguity crops up in the B-to-B world where customer relationships are much more complex, contextual, and drawn out. The line between new customer and retained customer can get rather ill-defined for companies that sell jet aircraft.

Reach

In the world of advertising, *reach* refers to the potential to gain the attention of your target audience. Used as a standard in the television industry, reach is the number of people (or households) who have the opportunity to see your message given a program's total active viewership. For instance, 180 million people might tune in to the Superbowl on any given year, so the reach of your ad that aired during the first timeout in the third quarter would be 180 million people. Of course, as an advertiser you have no guarantee that 7 million people did not change the channel, or that 15 million did not head to the refrigerator.

A different way to calculate reach is as a percentage of the total potential market. If you are trying to attract the attention of the 5 million buyers of 3-D rendering software tools for architects, you might place a banner ad on an architectural portal Web site. If that site draws one million distinct people a month who fit the description of a potential buyer, your reach on that site is 20 percent of the total universe of 5 million buyers.

"I don't have a hard number for how many [specific industry professionals] there are in the world. I have a 'guesstimate' and we just tend to track unique visitors against that guesstimate on a monthly basis." — (Technology company)

Another aspect of reach is *total site reach*. Assume you decide to promote your software on the Expedia travel site. If Expedia attracts 25 million unique users per month and your ad was shown to 5 million unique users, then your reach to Expedia users was 20 percent for the month.

Some companies do not measure their reach until the potential buyer has clicked on the banner. They do not consider that prospect as "reached" until the message has been delivered, read, and acted on. Others call this step acquisition.

Acquisition

In the reach stage, the goal is primarily one of awareness. Is your target market aware that you are selling toys, or marketplace research results or construction cranes or architectural software? This contrasts with *acquisition*, where the goal is customer participation. Did members of your target market, having seen and perhaps remembered your promotion, interact with your business in any form? Did they walk into your store? Call you on the telephone? Send you a fax? Email you? Visit your site?

For most companies, acquisition has more to do with getting the prospect firmly into the top of the customer life cycle funnel (see page 45). Outside the funnel, prospects are "suspects." They might fit the right market segmentation criteria, but it is unknown if they are ready, willing, or able to buy. Once a potential prospect takes an overt action expressing interest (e.g., signing up for a newsletter, taking a survey, joining a discussion list, filling out a form in return for a white paper, or downloading a demo), you have acquired a new prospect. But actually making the sale is still very much in question.

Conversion

Many companies look at *conversion* as the point at which a sale has been made and the prospect has been converted into a customer. However, in the online realm, conversion has a myriad of meanings depending on the goals of the particular site. An individual may be deemed converted at initial registration after setting up a personal profile, after participating in a chat forum or online discussion, or by using a product configurator to get a fix on product features and price ranges.

"We measure 16 types of conversion and 15 types of retention."
— (Portal company)

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Section 6: The
Customer Life Cycle

Tower Records equates conversion with a purchase. An article in the *Industry Standard* (March 6, 2000) reported that adding one new navigational feature made a significant impact on Tower's conversion rate. People looking for artists or song titles do not always know the exact name so Tower implemented a search engine that finds related items, rather than only finding exact matches. Tower doubled their conversion rate.

"For us, [conversion] means that people go from being strictly a member to people who are transacting members." —(Portal company)

The process of converting a prospect into a customer is a matter of progressive qualification followed by action. An acquired prospect is only at the first stage of qualification. One million architects may have seen your banner and 25,000 may have clicked on it, but you cannot consider them prospective customers yet. It may take several visits to your site and a series of actions that prove their intent before they can be considered qualified buyers. Do they have a set of needs your software can fulfill? Do they have the right hardware to run it? Do they have the authority to make a purchase decision? Can they afford it?

Only if they satisfy all of those criteria are they a qualified prospect, with the likelihood of being converted into a customer. However, those without the need, the desire, and the means will not buy.

Less than 5 percent of e-commerce site visitors buy something. But companies spend an average of \$250 on marketing and advertising to acquire one customer. The gross income from a typical customer (after operating costs are deducted from the money the customer spent) is \$24.50 in the first quarter and \$52.50 in every quarter that he or she is a customer. But two-thirds of buyers don't make a repeat purchase — so the typical e-commerce firm doesn't make money off of the average customer.

From the *Industry Standard* article 'Thank You, Please Come Again' by Mark Mowrey (who was in turn referencing a recent McKinsey & Company e-commerce research report).

<http://www.thestandard.com/research/metrics/display/0,2799,13016,00.html>

Retention

What began as an all-out effort to secure a purchase order now turns into an investment in encouraging repeat purchases. The "one-to-one marketing" concept begins with the assumption that it is far less costly to sell additional products or services to an existing, *retained* customer than it is to find and secure a new customer.

"We're not just interested in the folks who come and buy because obviously we want the content to be compelling enough for folks to come back. So we spend as much time looking at return visitors as we do return buyers." —(Portal company)

Current customers have made the buying decision once. They already have a relationship with the firm in terms of trust and process. Your deliveries are on time, their quality assurance team has verified the prowess of your manufacturing team or stable of consultants, and they have a general sense that your firm lives up to its promises.

This level of trust is necessary to keep the customer coming back from shipment to shipment, or software version to version. Customer care, product quality, and process efficiency all are critical factors. Consistent retention is what makes the cost of customer ownership so much lower than customer acquisition. It is what gives one customer a higher life time value (see page 55) than another.

“Repeat customers at 10 popular retail sites spent 57 percent more than one-time shoppers. Furthermore, loyal customers appear willing to expand their shopping across categories. For example, almost 70 percent of loyal Gap Online customers said they would consider buying furniture from Gap Online.”
—From a recent study by Boston-based Bain & Company (www.bain.com)

While acquisition, conversion, and — to some degree — reach can be considered time-certain, retention is not so easy to pinpoint. A user is reached at one point in time, becomes a prospect at another point in time, and then buys, becoming a customer. Then that customer buys a second product two weeks later. Is this person considered retained? Some high-churn businesses may not consider someone retained until his or her third or fourth purchase within a given time window.

What if the second purchase did not happen until eight months later? Is this customer retained? Deactivated and reactivated? Lost and won back? Unless you are selling commercial aircraft — in which case another purchase within eight months would definitely indicate that the customer has been retained — or automobiles, where retention is measured in years — the timeframe for retention is generally a short one.

The data indicates that customer retention is the key for e-commerce firms hoping to eventually make a profit. McKinsey estimates that enhancing customer retention is better for the bottom line than acquiring new visitors, bringing in new buyers or even trimming the cost of retaining customers. A 10 percent increase in repeat customers would mean a 9.5 percent increase in the corporate coffers, according to McKinsey’s calculations.

From the *Industry Standard* article ‘Thank You, Please Come Again’ by Mark Mowrey

6

Section 6: The
Customer Life Cycle**Loyalty**

According to www.dictionary.com, *loyalty* is defined as “the act of binding yourself — intellectually or emotionally — to a course of action.” The customers with the greatest life time value are generally those who are not only loyal to your products, but also loyal to your company. They are the ones who are willing to promote your firm and act as references to other prospects. They run user groups and fan clubs. They tattoo your company logo on their bodies.

You know you have a strong brand when a significant portion of your customer base tattoos your logo on their chests and forearms. Just ask Harley Davidson.

On the Web, loyalty also refers to site visits over time. People who visit your site more than once a week may be more valuable than those who visit once a month. Prospects who are considering the purchase of an automobile are more likely to buy if they show up on a daily basis for a month. But there is no expectation they will return month after month. Once the buying decision has been made, they usually will stop visiting car sites altogether.

“Loyalty to me is repeat customers — who’s visiting our Web site the most, who is actually purchasing product, data, or whatever...” — (Technology company)

Loyalty, then, means very different things to different sites. Those selling advertising space to generate income are completely dedicated to increasing the number of site visits and page views. Yahoo, AltaVista, MSN, and other portal sites are constantly looking for ways to get people to come back more often and stay longer.

“We’re starting to look at defining loyalty in terms of our promotions. Are our customers loyal because of coupons or are they loyal because of the brand?” — (Retail company)

As entrepreneurs invent new business models, they generate new types of Web sites. These can easily be classified on their business versus consumer orientation (Table 2), but how they measure loyalty is a little more complex.

TABLE 2: Internet Technology Market Segments (Money Magazine, December 1999).

Sector	What the Business Does	Orientation	Sample Companies
Auctions	America's online garage sale	B-to-C	eBay, OnSale
Buying Groups	Web sites that sign up people who want to buy a particular product, then seek a volume discount from vendors	B-to-C	MobShop, Mercata
Communities	Web sites with specialized articles and discussion boards where people with common interests come to "talk" online	B-to-C	iVillage, About.com
Content	News and commentary for general and special-interest audiences	B-to-C	Red Herring, The Industry Standard
E-marketers	Help companies with customer acquisition, customer service, advertising strategies	B-to-B	DoubleClick, Net Perceptions
E-tailers	Online shopping	B-to-C	MicroWarehouse, SmarterKids.com
Exchanges	Marketplaces for industry-specific goods and services	B-to-B	EarthWeb, ChemDex
Portals	Gateways to the Web; collect and organize sites so users can find the information they want	B-to-C	MSN, Yahoo!
Reverse Auctions	Sites will allow companies that need services — bookkeeping, computer help — to post requests for bids	B-to-B	BizBuyer, Import-Quote.com
Services	Banks, brokerages, travel, and more	B-to-C	Schwab, Fidelity, TravelScape
Software	Web software that links disparate parties — like doctor, hospital, patient, and insurer — that work together	B-to-B	Ariba, Healtheon
Web site Infrastructure	Provide software and services that make building and running Web sites easier	B-to-B	NetGenesis, Exodus Communications

6

Section 6: The Customer Life Cycle

Loyal customers come back frequently, buy often, recommend your company to others, and readily try out new things. They may even come looking for products or services that you do not offer. Perhaps a customer is a regular buyer at BarnesandNoble.com, but does she also buy at Amazon.com? What if BarnesandNoble.com started selling travel? How quickly would she start buying travel from them? She might be a loyal book buyer, but will she be a loyal CD buyer as well? Will she be *devoted* and buy just about everything she can from Barnes & Noble? Will she recommend Barnes & Noble to her friends?

Section 7: The Life Cycle Interrupted

Every salesperson has a story about the well-qualified prospect that got away. Even a well-planned persuasion process is filled with opportunities for the prospect to be swayed by the competition or simply lose interest. Despite our best efforts, not every prospect passing through the customer life cycle reaches the desired conclusion. Prospects demonstrate their lack of enthusiasm through abandonment; existing customers, through attrition.

Abandonment

One of the curious characteristics of online sales is the shopping cart *abandonment* factor. In the bricks and mortar world, it is relatively rare for a shopper to fill a cart and then leave it and all of its contents without going through the check-out line. Yet this is a very common occurrence on Web sites. The reasons are many, with studies pointing to causes including 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.

When a shopper with a profile resembling that of an abandoner begins placing items in a cart, or the list of items is very similar to those in carts abandoned in the past, a dynamic Web site can take action by offering special incentives or displaying messages regarding the ease of completing the purchase. The goal is to turn more shoppers into buyers. Watching shopping behavior for signs of trouble can prove profitable.

Suppose that shoppers at a business telephony Web site tend to buy two or three items at a time. When a shopping cart begins to fill with ten or twelve items, the activity might set off a trigger to include persuasive content on the next screen. The site might offer to open a business account for the shopper, or offer a chat session with an online service representative to discuss the shopper's needs.

Abandonment does not apply strictly to electronic shopping carts in online stores selling packaged goods. Any multi-step buying process may suffer from abandonment. An online brokerage wants to make sure that its users do not merely trade, but also add more funds to their portfolios. If a steadily trading client makes no deposits over a given period of time, the site might offer specialized consulting, education, or access to additional investment research.

Between clicking on a banner ad and making a purchase, there are many points where a prospective customer may fall out of the life cycle. The 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.

Attrition

Once a customer, always a customer? Not so. The *attrition* rate is the percentage of existing, converted customers who have ceased buying from you and have gone elsewhere during a specific period of time. As reported widely in the media, when Delta Airlines added a \$2 surcharge to fares not booked over the Internet, the marketplace protested that the fees were unfair. The number of people who had previously purchased on a regular basis, but stopped coming back, appeared to grow alarmingly. Had Delta offered a discount for buying online or an additional 1,000 frequent flier miles, like their competitors United Airlines and American Airlines, Delta likely would have avoided this infamous marketing episode.

“On our email subscriptions, [we measure] how many people have unsubscribed, but that’s not readily available. The data is out there, but it’s not published on a consistent basis. We hope to have that within three months.”

—(Publishing company)

Attrition is different from abandonment. If you switch your telephone service from Bell Atlantic to MCI, then Bell Atlantic considers you to have “attrited” — a sure sign of a lack of loyalty. If you call up Bell Atlantic, start to switch over, but then balk at a certain contract term and hang up, then you have abandoned the conversion process.

Attrition is the 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.

Churn

Churn measures how much of your customer base ‘rolls over’ during a given period of time. 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. Christopher Knight provides a concise example of ISP churn in his ‘Churning Out Marketing Ideas to Keep Customers’ article that appeared in the September 1999 issue of *Boardwatch* magazine (<http://www.boardwatch.com/mag/99/sep/bwm49.html>):

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, which is your churn ratio.

Your growth rate for the month is 200 divided by 2,000, which equals a 10 percent growth rate. Annualized, this means (assuming you continue averaging the same performance each month) your ISP has a 27.6 percent churn rate and a 120 percent annual growth rate.

Now that you have an introduction to the basics of the Customer Life Cycle, the next step involves measuring and characterizing your customers effectively.

Section 8: Best Customer Metrics

Recency, Frequency, and Monetary Value (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 — historically?
- **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. This dimension is different from frequency in that it identifies customers who place infrequent but high value orders and, therefore, could be highly profitable.

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.

Recency

Recency is a core measure that describes how long it has been since your Web site recorded a customer event (e.g., visited the site, purchased a product, etc.). Recency is generally considered to be the strongest indicator of future behavior. According to RFM, the most likely users to purchase tomorrow can be readily calculated from past experience. A loyal luggage buyer may buy a suitcase once every three years. Milk, bread, and egg buyers tend to shop weekly.

When browser-based "cookies" first came on the scene, they were used to welcome people back and let them know how the site had changed since their last visit. More than just a parlor trick and more than just a convenient way of keeping people up to date, knowing when somebody was last at your site is an important part of user profiling.

As recency diminishes — as the time since the last activity or event increases — the potential for future purchases decreases. Eventually, a pre-determined amount of time lapses and the user has officially attrited. In an attempt to reactivate customers, different offers might be targeted to different users as recency fades. If you have shopped at Amazon.com with any regularity, you may have received a "we miss you" gift certificate. The Amazon system notes the consistency of your visits and purchases and sends off an email enticement should you fall outside of your normal purchasing pattern.

Frequency

"I want to know how many people are coming every day and how many people only visit once." — (Publishing company)

Users may visit hourly, daily, weekly, monthly, or less. Here are three scenarios where *frequency* means different things to different sites.

The Retail Experience

A user who only comes to a florist Web site four times a year may be considered a very loyal customer. A wedding anniversary, Valentine's Day, a spouse's birthday, and Mother's Day are the major flower-giving occasions. A one-time-only user can be encouraged to come back for another holiday as can the user who only comes twice a year. But the user who comes four times needs special enticement to increase his or her frequency. A dollars-off coupon, a bouquet-of-the-month club, or a "buy ten, get one free" offer may all appeal. Offers can be tested on each level of frequency to increase response rates.

The Considered Purchase

Deciding on the acquisition of an expensive item creates a decidedly different rhythm of site visits. The occasional click-through at the start of the process gives way to a steadily increasing number of visits up to the moment of purchase. If these traffic patterns are properly modeled, they can lead to a clear indication of when the sale may occur. With this knowledge — and some clever data mining techniques — a company can build predictive models to be more proactive, launch opt-in email campaigns, dynamically alter the site, or have a salesperson call on the prospect. Manufacturers can use information about the frequency of visits to notify their distribution chain about potential sales. Service organizations can watch customer activity to determine the right moment to up-sell and cross-sell. Training departments can track frequency to decide when to offer additional courses.

The Business-to-Business Bond

Frequency becomes even more important when the relationship between parties is long-standing. When extranets are used in the place of electronic data interchange (EDI), the pattern of visits and orders can be very telling as Web site traffic becomes the pulse of the buyer/seller relationship. If a steady customer with a predictable pattern of visits changes her browsing and buying habits, it is a good sign that human intervention can increase the spending potential. Frequency information can yield insight into a customer's displeasure, expose a shift in customer personnel, or signal the possibility of increased business.

Monetary Value

The monetary value of a Web site user can only be estimated until a purchase is made. The user who comes once a day for a week is assigned a much higher probability of purchasing than one who comes once every three months. As soon as a user becomes a customer, actual monetary value can be derived from spend and profit margin data. Over time, how much does the customer buy per month? How profitable are those sales? What are the characteristics of a high spender versus a low spender?

Figure 16:
Visualization
of 125 RFM
segments.

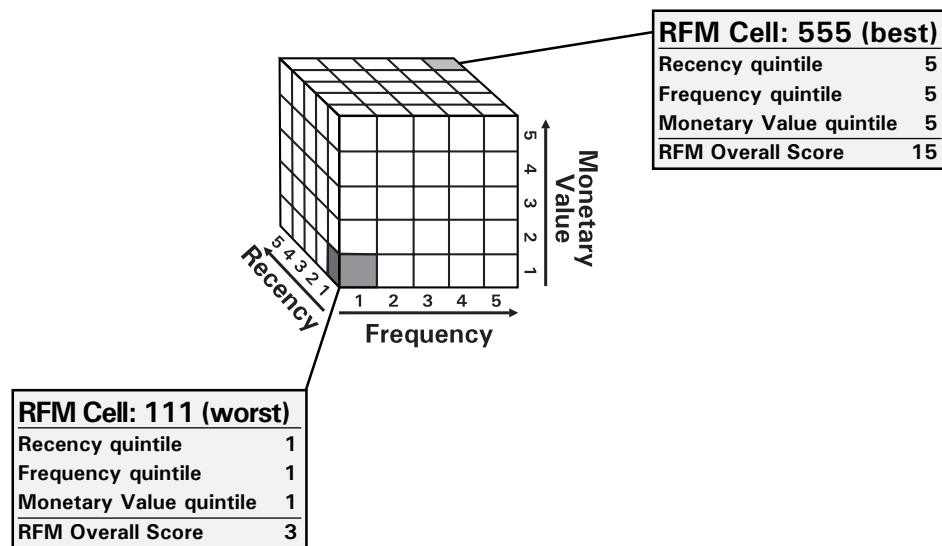


Figure 16 shows a three-dimensional representation of 125 customer segments stratified by recency, frequency, and monetary value scores. How might you market to, sell to, and support customers differently in segment 555 versus 111? What about segments 515 and 254?

Clearly, different Web sites will have different indexes for purchase probability and profitability. But historical ratings of actual customers are of great value when spread across the users of a single site. These are the figures that help sites recognize which users are most likely to become profitable buyers.

Duration

As is true for recency and frequency, the *duration* of an individual's visits can be a clear signal of intent and a forecast of a possible change in the relationship. Different companies have different goals for the duration of each user's stay on their site.

A technology company that caters to technologists may want to do everything in their power to shorten the duration of each visit. Why? Because their customers repeatedly tell them that they are busy, and that they are not coming to the site for entertainment or community, just product information. If the pages load faster, if the information is easier to find, if customers can make a decision more quickly, they are happier.

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Section 8: Best
Customer Metrics

E-retailers such as Barnesandnoble.com and Amazon.com live in both worlds. They want people to stay as long as possible. They want a user who looks for something as general as “cooking” to see the wide variety of available products. The customer will find books, of course, but he or she might also find cooking software, kitchen appliances, and cooking games and videos, all arranged in as nice a way as possible to make the user stay. But once a buying decision has been made, both Barnesandnoble.com and Amazon.com make it as easy and fast as possible to buy. Each offer immediate purchase capability — Express Checkout at BarnesandNoble.com and 1-ClickSM at Amazon.com) — greatly simplifying the purchase process. E-retailers have discovered a trend long understood by their brick-and-mortar counterparts: fast check-out reduces shopping cart abandonment.

In the case of a considered decision purchase, the length of stay may indicate the seriousness of the buyer. If somebody stops to look at something for only a minute or two, that person profiles differently from the user who spends an hour reviewing options. In Section 11, we will discuss how to measure stickiness — getting users to stay longer — as well as slipperiness — getting them out fast when they are finished shopping.

In combination, the elements recency, frequency, monetary value, and duration paint a detailed picture of how a site is being used and where changes can be made to increase its yield.

Yield

According to InvestorWords (www.investorwords.com), *yield* is defined as “the annual rate of return on an investment, expressed as a percentage.” While meant to describe yield on general financial investments, this definition aptly fits e-metrics. Yield refers to results, and results depend on goals. The auto manufacturer’s goal is to get the prospect in touch with the dealer; the high technology company’s goal is to help the engineer make a better decision faster; the stock trading site’s goal is to encourage people to invest more money with their institution, and so forth.

Yield is the measurement of how well your site is reaching its first-level goals. How many people have your promotional efforts attracted to your site? How many of them returned two months later? How often do they come back? The answers determine the shape of your customer life cycle funnel (see page 45) and provide an indication of the monetary value of each user.

Section 9: 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.

Acquisition Cost

$$\text{Acquisition Cost} = \frac{\text{Advertising and Promotional Costs}}{\text{Number of Click-Throughs}}$$

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.

Cost Per Conversion

$$\text{Cost Per Conversion} = \frac{\text{Advertising and Promotional Costs}}{\text{Number of Sales}}$$

If you spent \$25,000 on marketing programs, acquired 5,000 users for your efforts, and 5% 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.

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Section 9: Promotion Calculations

Net Yield

Net yield determines the effectiveness of a multi-step process where incremental costs are not available, such as creative/banner testing or the comparison of two paths leading to the same goal.

$$\text{Net Yield} = \frac{\text{Total Promotion Cost}}{\text{Total Promotion Results}}$$

Here are two examples to help illustrate how net yield calculations can help in your decision making processes:

- Banner A had a high click rate, but a low conversion to sale. Banner B had a low click rate, but a high conversion to sale. By comparing the net yield calculations for Banner A against Banner B, you can quickly identify the better-performing banner.
- For a Web-based contest, some users might receive an intermediate jump page before the registration page, while others might land on the entry form immediately. To determine the optimal path in terms of conversion, the net yield would be calculated by dividing the total number of contest entries by the total entry page visits. This lets you determine if the interstitial jump page helps users understand the contest and makes form completion more likely, or if it gets in the way and causes abandonment before the form is filled out.

Connect Rate

A promotion's *connect rate* is useful for identifying any potential technical issues in page loading or tracking mechanisms. The connect rate measures the number of people who click on a banner or link and then successfully land on the targeted page.

$$\text{Connect Rate} = \frac{\text{Promotional Page Views}}{\text{Promotion Click-Throughs}}$$

Ideally, your connect rate will equal or be very close to 1, showing that every user who clicked on the promotional banner or link successfully received the subsequent promotion page. If your connect rate falls below 0.80, it means at least 1 in 5 click-throughs failed to reach the destination page. This might be due to your server timing out or would-be users clicking the Stop or Back button. This will in turn affect your acquisition numbers and hence the rest of your customer life cycle funnel.

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Section 9: Promotion Calculations

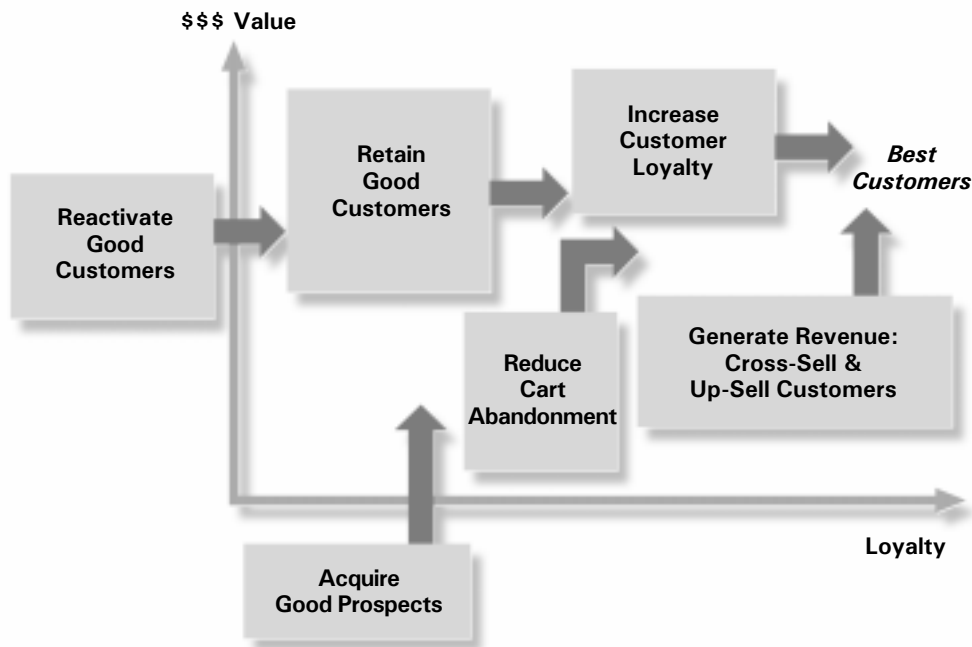
If the connect rate drops to 0.80, the bottom line impact is substantial. For 5,000 click-throughs, only 4,000 users actually visit your site, resulting in an acquisition cost of \$6.25 rather than \$5.00. Assuming the same 5% conversion rate, now 200 customers convert for a cost per conversion of \$125. In this case, a connect rate of 0.80 resulted in 50 fewer paying customers and a \$25 premium on cost per conversion.

Delivering on the Promise of the Customer Life Cycle

The calculations described above will help you understand the basics of attracting prospects to your site, walking them through the customer life cycle, and encouraging them to stay. These standard bookkeeping methods are available to all and are not overwhelmingly complex. They are the minimum daily requirement for a company that wants its site to be an important, vibrant part of its advertising, marketing, and customer service efforts.

But these calculations are only the beginning for the company that wants to get the most out of e-business. Just as there is a significant difference between bookkeeping and accounting, there is a significant difference between tracking the success of an online advertising campaign and measuring the overall effectiveness of your Web site. Figure 17 shows a generic process flow for maximizing the life time value of prospects and diverse customer segments.

Figure 17:
Life Time Value Optimization Process.



Section 10: Measuring the Successful Life Cycle

Net profits are the easiest and most intuitive metric to determine your return on investment (ROI). But this is only part of the story. Dollars alone do not make great customers nor do they offer insight into maximizing customer life time value. The following e-metrics focus on modeling, measuring, and influencing the transition from suspect to prospect and from prospect to customer.

Life Cycle Pipeline

Every successful sales and marketing organization tracks the sales pipeline. How many prospects have been rounded up and placed in the top of the sales funnel? How long does it take to qualify them? What are the necessary steps to get them to close?

If you are selling quick-decision, low-priced items, this all happens during the marketing and advertising process. Otherwise, the process may involve a product demonstration or trial, committee meetings, outside consultants, and client reference conversations before the sale is made. All of these draw out the buying process.

Here are the typical stages of a sales cycle pipeline:

- **Prospect:** Someone who has responded to a promotion, expressing interest in making a purchase.
- **Suspect:** A suspect who fits the profile of current customers. Valuable for targeting advertising and promotional efforts.
- **Qualified Prospect:** A prospect who has been contacted and their need, desire, and ability to purchase has been verified.
- **Closing Prospect:** A qualified prospect about to become a customer.
- **New Customer:** One who has just made a purchase.
- **Novice Customer:** One who is in the process of implementing the product and getting training.
- **Unhappy Customer:** One with a problem to solve.
- **Referring Customer:** A happy customer who is willing to talk to qualified prospects.
- **Company Advocate:** A very happy customer who helps to recruit new customers.

Tracking the life cycle status of each Web site user not only allows you to customize and tune the site for each user, it also provides continual insight into the health of your life cycle funnel.

Determining ROI Metrics

If one million banner impressions attract 2,500 architects and 250 of those pay for the software with a credit card, you can very easily determine your ROI. If the banner ad campaign cost \$25,000 and your net profit on each sale was \$200, spending \$25,000 to earn \$50,000 is a very healthy business model. But if only 25 architects buy, it is time to look deeper into the customer life cycle. It is time to define more metrics and measure more points where you can make improvements.

Table 3, based on a recent McKinsey & Co. report (<http://www.thestandard.com/research/metrics/display/0,2799,13016,00.html>), illustrates how improving retention can have significant bottom line impact. Note that this report concluded that the cost reduction options available to e-business managers are considerably less valuable to the company than the opportunities to decrease abandonment and attrition.

Table 3: The Bottom-Line Impact of Improved Retention.

Customer Retention Is the Key to Profitability				
Impact of a 10 Percent Improvement in Indicator on Current Value of E-Commerce Firms				
Metric	Definition	Value	If Improved By 10 Percent To	Increase In Company Value
Acquisition				
Visitor acquisition cost	Marketing dollars spent per visitor	\$5.68	\$5.11	0.7%
New-visitor momentum	Increase in number of new visitors in 2Q vs. 1Q	62.4%	68.6%	3.1%
Conversion				
New-customer acquisition cost	Marketing dollars spent per customer	\$250	\$225	0.8%
New-customer conversion rate	Percentage of new visitors who become customers	4.7%	5.2%	2.3%
New-customer revenue momentum	Increase in new-customer revenue, 2Q vs. 1Q	88.5%	97.4%	4.6%
Retention				
Repeat-customer maintenance cost	Operating expenses (less marketing) spent per repeat customer	\$1,931	\$1,738	0.7%
Repeat-customer revenue momentum	Increase in revenue from repeat customers, 2Qvs. 1Q	21.0%	23.1%	5.8%
Repeat-customer conversion rate	Percent of customers who become repeat customers	30.2%	33.2%	9.5%
Customer churn rate	Percent of customers not repeating in first half of 1999	55.3%	49.8%	6.7%

Based On Analysis Of First-Half 1999 Data. Source: McKinsey & Co.

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Section 10: Measuring the Successful Cycle

From a management perspective, the aggregate numbers are the most important result of this tracking. If you know that it takes 1,000 suspects to find 100 qualified prospects and that only 10% of those will end up as customers, then you can use the information about Web site users as a sales forecasting tool.

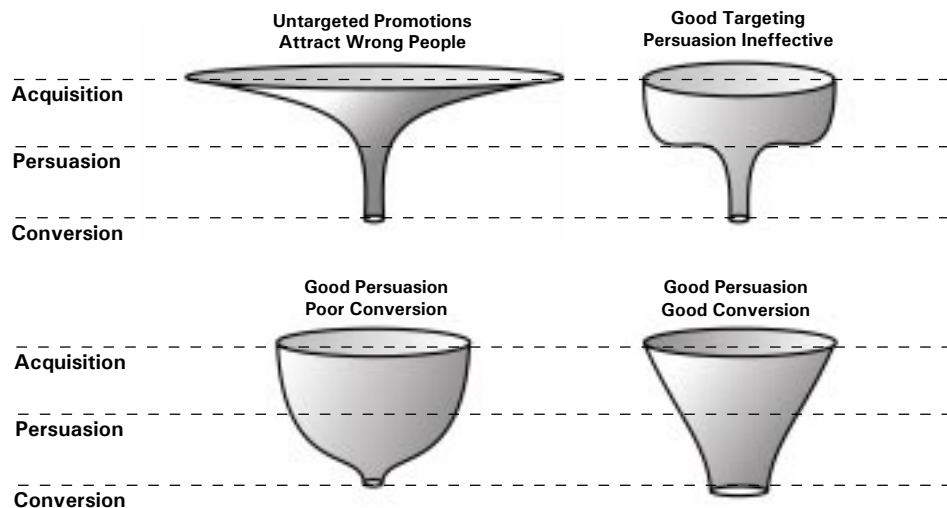
The power of this technique begins to show after reiterating the model over a period of several months. Rather than relying on the best estimates from your front-line sales organization, you can fine-tune your life cycle pipeline model as monthly or weekly sales are posted. This way, it becomes increasingly accurate over time.

From a top-line perspective, your Web site metrics become central to decisions about staffing, quotas, promotions, and production capacity.

The Customer Life Cycle Funnel

The *Customer Life Cycle Funnel* (Figure 18) is a powerful visualization technique that can help you quickly determine the roadblocks and bottlenecks that your customers encounter.

Figure 18:
Four
Potential
Customer
Life Cycle
Funnels.

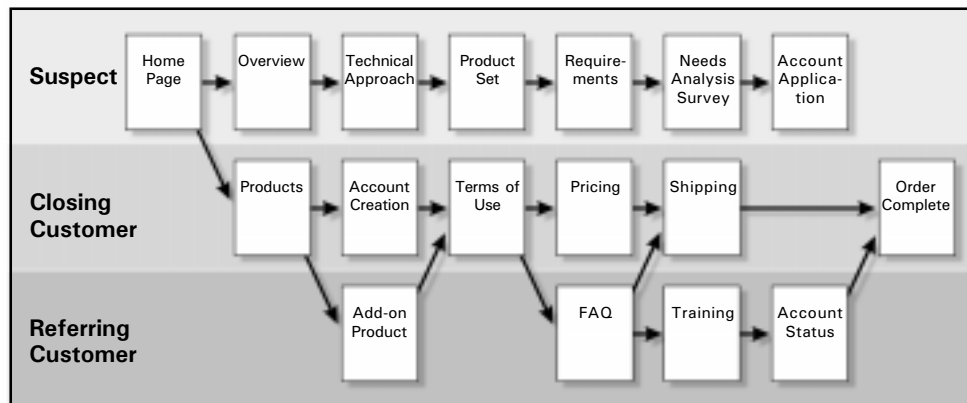


Prospects may not be learning what they need to know when they need to know it in order to stay in the life cycle funnel. Or, as Ford Motor Company thinks of it, they might have “wandered off the path”.

Optimal Site Path

In an interview at e-Marketer (www.emarketer.com/enews/enews_sandom.html), J.G. Sandom from OgilvyInteractive described Ford’s Web site strategy. Ford found that there were a number of alternative optimal site paths to reach Ford’s goal of users asking a dealer for a quote on a vehicle. Ford is not selling cars online, but trying to increase the number of people who ask for a formal price quote and make contact with the retail outlet — the car dealership. Customers who viewed the vehicle pages, configured the options to their liking, and selected the audio system and paint color of their choice, did not necessarily ask for a dealer quote. The people who were the most likely to ask for a quote were those who had also reviewed the financing options on the Ford site.

Figure 19:
Customers in different stages of the life cycle pipeline can be shown different types of content when visiting a site.



Once Ford had identified this as a critical step in the optimal site path, they were able to consider ways to encourage people to take this step. Financial calculation tools, expanded financing options, and email and Web-based reminders were put into place to increase the number of users who traversed the optimal site path.

Figure 19 shows how an *Optimal Site Path* (OSP) can reveal where in the life cycle pipeline each customer resides. The boxes in Figure 19 represent either specific pages a prospect must traverse to make a purchase or subject areas where previous customers spent specific amounts of time. It does not matter if that path requires 10 minutes or 10 weeks to traverse. The OSP reveals the viewing habits of real buyers and makes it easier to classify those who have not yet purchased. If those who actually became customers typically looked at the product specifications, the warranty, the success stories, the price, and then the licensing, it is likely that other prospects should have the same experience on their way to becoming customers.

This sort of data suggests where you should focus your promotional efforts. If customers are much more interested in one set of specifications over another, then those are the specs that belong in the catalog, in the direct mail piece, or on the banner ad.

You can measure the power of your promotional efforts. You can measure the impact of changes you make to your site. You can measure the speed with which you acquire new customers and the effort it takes to keep them. But for those who would take the promise of the Internet and the Web as a starting point, there are entire constellations of new e-metrics waiting to be discovered.

Section 11: E-Metrics & E-Customer Behavior

Here we present a handful of fundamentally new e-metrics designed to provide insight into e-customer behavior and provide readily actionable information. The e-metrics discussed include:

- Stickiness
- Slipperiness
- Focus
- Velocity
- Seducible Moments

While each of these e-metrics illuminates a different facet of your e-business, each is intrinsically related to the customer life cycle and designed to help you better understand your customers.

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 users' 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:

$$\text{Stickiness} = \text{Frequency} \times \text{Duration} \times \text{Total Site Reach}$$

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:

$$\text{Monthly Stickiness} = \frac{250,000 \text{ Visits}}{50,000 \text{ Active Users}} \times \frac{1,000,000 \text{ Minutes}}{250,000 \text{ Visits}} \times \frac{50,000 \text{ Active Users}}{200,000 \text{ Total Users}}$$

Monthly Stickiness = 5 Minutes/User

This stickiness calculation can be applied to entire sites or sections of sites, and can also be used to compare trends between different customer segments.

The mathematically-inclined reader will recognize that the stickiness formula can be simplified as shown below, although this formulation gives less insight into the individual factors that affect stickiness.

$$\text{Stickiness} = \frac{\text{Total Amount of Time Spent Viewing All Pages}}{\text{Total Number of Unique Users}}$$

Slipperiness

Some areas of your site are significantly better if they have very low stickiness. Which areas? The Customer Support section for starters. The last thing your management wants to see is how your customers have to look at lots and lots of pages and spend huge amounts of time reading about product fixes and return policies.

In this case, you want the Customer Support section to be *slippery*, not sticky. This means that users come in, quickly find what they are looking for, and then get out. The check-out/purchase portion of your site gets better as it becomes more slippery. Every additional click required to make a purchase represents another opportunity for the prospect to change his mind and back out.

Slipperiness is equivalent to low stickiness. Given the three factors of stickiness, a slippery section is one where visits are short, visit frequencies are low, or users are few — or some combination of these conditions.

Focus

Focus is another concept related to page visit behavior within a section of the site. Suppose there are 15 pages in a section. A focused visit may touch 2 or 3 of these, a less focused visit might touch 5 or 6 of them, and an unfocused visit might touch 8 or 10 of them. Therefore:

$$\text{Focus} = \frac{\text{Average Number of Pages Visited in a Given Section}}{\text{Total Number of Pages in the Section}}$$

If the average user views 3 pages in a section out of 15, then the user’s focus in that content section is 0.20. Smaller values for focus are referred to as *narrow focus* while larger values are termed *wide focus*.

Is wide or narrow focus better? The answers depend on the type of section and on the user behavior viewed as desirable for that section. A sticky area of content is likely a good sign, but a sticky checkout area at an e-commerce site may signal an unnecessarily complex checkout process. Narrow focus is good at a customer service area of a site, but perhaps not at an online auction section of a site.

Table 4 shows stickiness and focus in combination for a given section of the site:

	Low Stickiness	High Stickiness
Wide focus	Either quick satisfaction or perhaps disinterest in this section. Further investigation required.	Either consuming interest on the part of users, or users are stuck. Further investigation required.
Narrow focus	Attempting to locate the correct information.	Enjoyable browsing indicates a site “magnet area.”

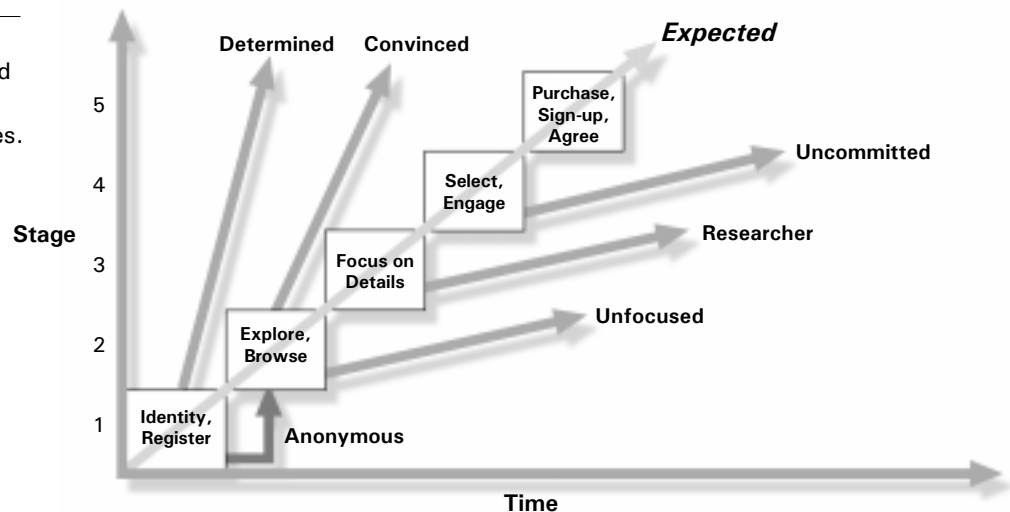
Table 4: Focus and Stickiness compared.

Since certain combinations are open to multiple interpretations, optimal site path analysis will help shed more light on what is really happening. But the combination of the *stickiness* and *focus* e-metrics for a whole site or a specific section can often be more powerful than stickiness alone.

Velocity

On a more tactical level, tracking your pipeline gives you the information to improve the Web site itself. *Velocity* is the measure of how quickly a user moves from one stage of the customer life cycle to the next. Clocking the prospect qualification process gives you the average amount of time it takes for a member of a given market segment to pass from awareness, through deliberation, to decision. This is illustrated in Figure 20:

Figure 20:
Segmented
Velocity
Trajectories.



With a specific time span in mind, the site designer can test alternative navigation techniques, while the marketer experiments with different offers. Between the two of them, they can identify seducible moments as well as rough patches.

Seducible Moments

Seducible moments are those junctures where a prospect is exceptionally susceptible to an offer. It may be the rapid purchase button next to a desired product — or an up-sell offer at the moment a customer is deciding between two service choices. A seducible moment does not have to be product-related — it may be the point where a user must decide to join a discussion group or subscribe to a newsletter. The right encouragement or the right graphic might just do the trick — seducible moments will be different on every site.

Rough patches, on the other hand, diminish the momentum or the speed at which a browser becomes a buyer. Rough patches often appear as those places where the shape of the customer life cycle funnel suddenly gets narrower because many users are abandoning the process.

Reviewing the profiles of the members of a given market segment reveals different attributes of those slow to decide and those quick to buy. Skewing your promotional efforts toward those with a higher velocity rating can have a direct effect on bottom line sales, while altering your persuasion techniques to those who are slow and need more assurance may bring in buyers who have previously been considered un-acquirable.

Section 12: Personalization Index, Life Time Value, Loyalty Value, and the Freshness Factor

The greatest value of a Web site is its accessibility. From anywhere in the world, at any time of day or night, with nothing more than a computer and a phone line, a prospect or customer can see your Web site and absorb its message. Running a very close second to Web site accessibility is the fact that your Web site can remember everything about the people who decide to visit — when they come, what pages they look at, how long they spend on each page, which products they find the most interesting, and more.

In e-business, privacy considerations are paramount and must be considered throughout any customer information gathering process. Today's forward-looking organizations are posting privacy policies on their Web sites, adopting the core concepts of fair information practices, and establishing internal data protection teams to stay on top of major privacy-related issues. We strongly recommend that you consider taking similar actions.

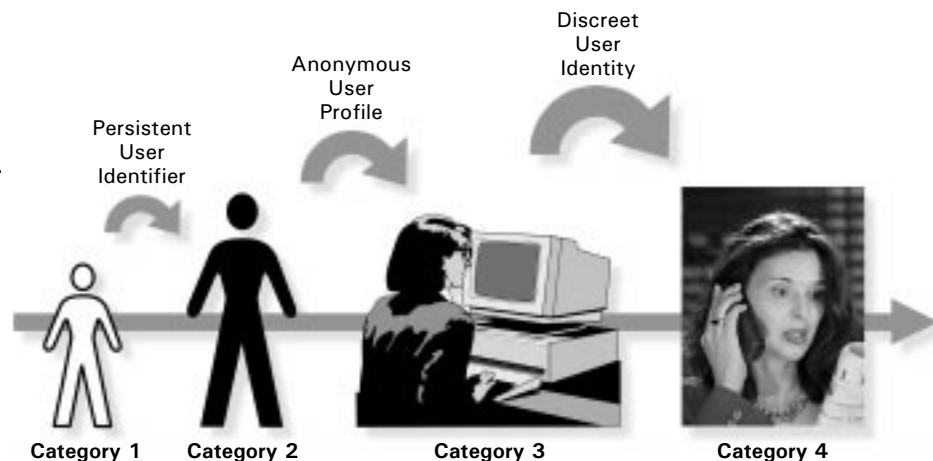
This section dives into several additional e-metrics including:

- Personalization Index
- Life Time Value
- Loyalty Value
- Freshness Factor

Personalization Index

The universe of profile elements is virtually unbounded, covering familiar items such as last name and business address, technical concepts such as IP address and connection speed, and domain specific attributes from pore size (for cosmetics) and lifestyle risk profile (for insurance). Figure 21 shows the four stages of e-customer understanding. By adding incremental profile information, e-business managers are able to transform Category 1 anonymous users into the distinct, real-world Category 4 individuals.

Figure 21:
The Four
Stages of
E-Customer
Understanding.



Collecting information is one thing. Using it in a judicious way is another. The *Personalization Index* (PI) distinguishes just how well you are using the data you are gathering. The PI is a measure of how effectively an e-business is leveraging this customer data.

$$\text{Personalization Index} = \frac{\text{Total Number of Profile Elements Used in Customer Interaction}}{\text{Total Number of Customer Profile Elements Collected}}$$

If your PI is above 0.75, then you are making the most of the information you are collecting. That means your efforts are not wasted, nor are those of your customers who are providing the raw material.

The above assumes that you are using a significant number of elements to make a personalized Web experience. If you are only collecting two elements and using them both, your PI score may be 1.00, but here it means you are only performing market segmentation rather than personalization. You are only able to group your prospects and customers into broad categories. While useful, broad categories are not as powerful as true personalization based on dozens of attributes.

“Firms struggle to identify profitable individual activity, hobbled by antiquated segment-based approaches.” —Managing Customer Profitability, Forrester Research

When you collect more and more elements, you are able to classify users into more and more clusters. That is where broad segmentation moves towards personalization. That is where you start to foster a customer relationship and turn it into a loyalty relationship, significantly raising the cost for your customer to switch to another vendor.

If your PI is less than 0.30, then you are collecting more information than you are using. The good news is that you have a huge untapped reservoir of actionable data about your customers. The bad news is that the data is ‘lying fallow’ and probably getting stale fast. You need to either start using the data you have more effectively or cut down on how much explicit data you are trying to collect. Most likely, the correct answer is both. You are spinning your wheels collecting that information but you are not using it to benefit your customers, which adversely affects your customers’ experience.

Life Time Value

While *Life Time Value* is not purely an e-metric, the Web gives us more attributes to add to the mix when predicting the life time value of a customer. Besides giving us tools to increase the amount of money the customer spends and influence whether he or she buys the highest margin items, the Web also gives us the ability to cut costs as never before. As a result, industry analysts are recommending that companies create individual customer profit and loss (P&L) statements.

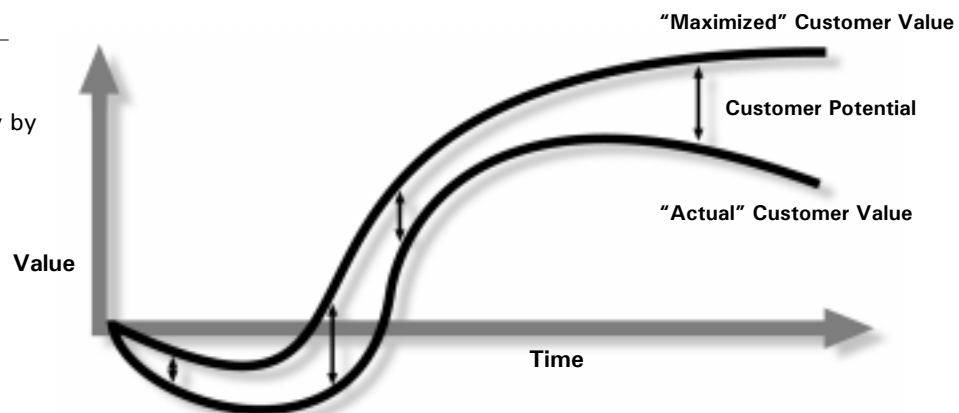
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Section 12: Personalization Index, Life Time Value, Loyalty Value, and the Freshness Factor

If a customer buys the most expensive item you sell, he might be at the top of the profitability heap — but only for a while. If that customer uses more and more company resources in the way of training, services, and additional consideration, his profitability standing will quickly fall (unless these are charged for separately). He may even fall to the same low-profitability level of those customers who only buy the least expensive, lowest margin items, and do not interact with the company thereafter.

With the Web, less valuable customers can be brought back up the scale of value by lowering the cost of making the sale, training, answering questions, and solving problems. This concept, sometimes referred to as customer potential, is illustrated in a diagram from a presentation given by Peter Stevens of Sophron Partners (Figure 22) (from www.crm-forum.com/crm_forum_presentations/target/ppr.htm).

Figure 22: Improving Profitability by Maximizing Customer Potential.



So go ahead and calculate your normal LTV using retention rates, orders per year, average order size, total revenue, referrals, direct costs, acquisition costs, gross profits, discount rates, and net present value profit. Just remember to discount those costs by the number of times that customers do not call you on the phone because they solved their problems online.

Loyalty Value

When determining the valuation of a Web-enabled company, it would be useful to have a standard, cross-industry e-metric indicating the loyalty of its customers. But loyalty is simply too industry-specific and even site-specific and involves an enormous number of variables.

If you have an email account at Yahoo! and you check it every day, you should earn a high loyalty rating from Yahoo!. However, if you also have an email account at Hotmail and check that daily as well, then you are not really as loyal as Yahoo! might imagine. If you check your stock portfolio at Schwab every weekday, but you check your mutual funds at Fidelity, are you still considered loyal?

Measuring the loyalty of a Web site user means creating an index you can use daily to see how the changes you make affect your customers. The Bain & Company study (see page 30) indicated that the average Amazon.com customer must remain loyal for approximately 2.5 years to become profitable.

“Successful online retailers will start shifting their focus from acquisition to retention by reaching out to customers with unexpected and tangible signs of appreciation — with gifts. This proactive customer service will require cross-organizational customer satisfaction metrics that identify who gets which goodies.” —from ‘Building Loyalty? It’s The Thought That Counts,’ Forrester Research

Each site must create a loyalty ranking system of its own depending on its goals and its experience. Here are our three scenarios again, involving the retailer, the considered purchase, and the business-to-business relationship, with different approaches to loyalty as an e-metric.

The Retail Experience

Customer loyalty here is measured in purchases. How much do they buy? How often do they buy? Are they a profitable customer? The formula for loyalty will include the following variables:

- **Visit Frequency:** Scored based on number of visits per month.
- **Visit Duration:** Scored based on number of minutes per visit.
- **Visit Depth:** Scored based on number of page views per visit.
- **Purchases per Visit**
- **Number of Items Purchased per Visit**
- **Total Revenue of Purchases per Visit**
- **Profitability of Purchases per Month**

If additional marketing programs are implemented, the customer might be evaluated on factors such as:

- **Number of Referrals per month:** Did the customer refer others?
- **Value of Referrals per month:** Did those referrals buy? How much?
- **Questionnaire Propensity:** How willing is the customer to answer survey questions?
- **Contest Participation:** How willing is the customer to participate in contests?
- **Reward Points Program:** How willing is the customer to participate in affinity programs?

The Considered Purchase

Loyalty can be measured on a short-term basis to try to clinch the sale. It can also be measured on a much longer-term time scale.

If the customer is buying a refrigerator, chances are excellent that she will not need another one for years. You can keep her in your database for those years while waiting for the right opportunity to remind her of your quality and value. Insurance companies keep information on newborns in their database for decades in order to offer additional auto insurance in fifteen and a half years.

Most loyalty calculations will revolve around how the user browses your site. Here we begin with the same variables as above in the Retail Experience, but with a twist:

- **Visit Frequency:** This is scored based on visits per decision period and mapped to a decision-making curve. Buyers of one type of product will visit a certain number of times in the first period, a certain amount in the middle of the process, and signal that a buying decision is actively being made when they increase (or decrease) to a different number of visits in a set time span.
- **Visit Duration:** Scored per session. This is another indication of how close to a decision the user may be.
- **Visit Depth:** Page views per visit are as revealing as frequency and duration.

To this list, we add the important analysis of how the user traverses the site:

- **Site Path:** How well is the user following an optimal site path?
- **Contact:** How often does the user send email, engage in a chat session, or fill in a form on the site? What sort of questions does the user ask?
- **Product Configurator:** How many times does the user run the configurator and which features are selected?

The Business-to-Business Bond

The metrics change again when it comes to extranets. In the business-to-business environment, the emphasis on selling is replaced with a focus on service. Taking orders and solving problems are paramount, while a less aggressive eye is kept open for up-selling and cross-selling. Loyalty comes in many shapes and sizes, and hence loyalty metrics naturally tend to differ greatly between different sites with different business models.

- **Visit Frequency:** In this environment, the watchword is consistency. Is the user coming to the site at set intervals and doing what is expected?
- **Visit Duration:** Are there any changes in the amount of time it takes the user to place the order?
- **Visit Depth:** Is the user looking at products above and beyond his or her norm?
- **Visit Tenure:** Time elapsed since first visit.
- **Purchase Tenure:** Time elapsed since first purchase.
- **Purchase Frequency:** Number of purchases per quarter (or month).
- **Total Lifetime Spending:** Total spending since first visit.
- **Visit Recency:** Time elapsed since most recent visit.
- **Purchase Recency:** Time elapsed since most recent purchase.
- **Required Clicks to First Purchase:** Minimum number of clicks required to complete the first purchase in a visit. The first purchase may require more clicks than repeat purchases.
- **Required Clicks to Repeat Purchase:** Minimum number of clicks required to make a repeat purchase.
- **Actual Clicks to First Purchase:** Actual number of clicks until the first purchase was made.
- **Actual Clicks to Purchase:** Number of clicks until a repeat purchase.

These variables provide e-metrics such as First Purchase Momentum

$$\text{First Purchase Momentum} = \frac{\text{Required Clicks to First Purchase}}{\text{Actual Clicks to First Purchase}}$$

and Repeat Purchase Momentum:

$$\text{Repeat Purchase Momentum} = \frac{\text{Required Clicks to Repeat Purchase}}{\text{Actual Clicks to Repeat Purchase}}$$

Freshness Factor

It has long been believed that a Web site must change constantly to hold the interest of any given audience. While this makes sense for sites that depend on users returning daily (news, weather, and sports sites as well as portals like MSN), the constant creation of content is expensive and time consuming. The *Freshness Factor* (FF) measures the impact of dedicating resources to the job of continuous content publishing.

The Freshness Factor is designed to measure how often content is refreshed versus how frequently users visit the site. You will want to perform this calculation against individual customer segments since they will be interested in different site sections and will likely respond to fresh content in different ways.

$$\text{Freshness Factor} = \frac{\text{Average Content Area Refresh Rate}}{\text{Average Section Visit Frequency}}$$

Just as you weight the value of individual data elements collected about a specific customer, you must weight the value of content elements based on a number of factors. The most obvious is timeliness. If this data element is imported from a stock price reporting service or a news feed from a wire service, when does it expire? When should this news article be moved over into the archive section?

If this content is part of a series of rotating elements, how recently has it been shown to this specific user? Different articles carry different weight based on their intended use. A white paper on choosing the right vendor may have a shelf-life of years, while updates on legislative issues are only interesting for a month or so.

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Section 12: Personalization Index, Life Time Value, Loyalty Value, and the Freshness Factor

If your Freshness Factor is less than 1, then — on average — your customers are visiting that section of your site more frequently than you are updating the content. Thus, they are seeing stale content and you can expect your stickiness numbers to decrease. On the other hand, if your Freshness Factor is greater than 1, then — again on average — customers see new content each time they visit your site, and your stickiness numbers should improve. If your Freshness Factor goes above 1.5, then you are running the risk of wasting resources to create content that is not being viewed.

Be careful of multi-modal distributions. If half of your customers visit every hour, and the other half visit once every 9 hours, then your average frequency is 5 hours. This reveals the general necessity of segmenting your customers and your site and performing all calculations, including Freshness Factor, on customer segments rather than global site populations.

Some of the e-metrics described in this document are going to be more valuable to you, for your industry and on your site than others. The e-metrics discussed so far are only the first step - but a very important step indeed.

Section 13: Conclusions & Summary

Our recent conversations with leading e-business managers, as well as the dialogues we have carried on with clients and the marketplace since 1994, furnish a wealth of information from which we draw our conclusions.

Major Takeaways

- **The move to a customer-centered economy is well underway.** The business culture at the beginning of the 20th Century shifted from the personal attention of the corner store to *mass production*. Henry Ford mastered the Industrial Age by bringing us the assembly line and vertical integration. The way to win was by producing more goods, faster and cheaper. In the second half of the 20th Century, the focus shifted to *distribution*. Sam Walton mastered transportation and logistics to show us how mass-produced products could be brought to market faster and cheaper.

At the outset of the 21st Century, the Information Age is transforming into the Communication Age with individuals like Jeff Bezos and Michael Dell making the most of the Internet to utilize *knowledge* about individual customers as never before. We are beginning to come full circle, once again focusing business effort on meeting the needs and requirements of our customers.

- **The value of knowing customers as discrete individuals is tremendous.** The Web gives us the ability to capture, store, and act on information about individual customers as a competitive advantage. With personal information about individual customers we can customize the Web experience for each user, accurately predict buying patterns, customize products and services to meet specific customers' needs, lower inventory carrying costs, and ultimately keep customers for life. The result will be the ability for first-movers to lock customers into long-term relationships through increased customer satisfaction and increased profits. If vendors are nimble and can readily meet new client requirements as they occur, the motivation for those clients to find other vendors will be low. Laggards beware.

"If you make customers unhappy in the physical world, they might each tell six friends. If you make customers unhappy on the Internet, they can each tell 6,000 friends with one message to a newsgroup. If you make them really happy, they can tell 6,000 people about you. You want every customer to become an evangelist for you." — Jeff Bezos, Amazon.com, Customer Service Management magazine, November/December, 1999

- **The opportunity to analyze more than just customer information is ripe for exploitation.** The tide of customer expectations is rising faster than ever. Today, we are struggling to compete armed only with customer profiles that cover such minimal data as gender, zip code, number of visits, and a few preference profile elements. Tomorrow, we will focus more on the interaction rather than just the information delivered during the interaction. Customer profiles will include information on how much customers know and how they like to communicate.

“Sites should begin building infrastructures to measure user information, as this information will become golden down the road.” —Eric Schmitt, Forrester Research

The rich store of information collected in the course of doing business on the Internet should be carefully archived and protected. Holding onto your raw data today will allow for deeper and deeper analysis tomorrow. Even though sites change so quickly that six month-old behavior data may not have the same relevance to the current site and infrastructure as current data, remember that disk space is inexpensive. Do not throw out tomorrow’s heritage to save a few megabytes of storage today.

- **Even the cutting edge e-businesses are not there yet.** Our research revealed that many of today’s leading sites are inundated with data yet lack the necessary people, technical resources, standard definitions, and domain expertise to extract much of the critical business value out of this data. While most e-businesses recognize they have a long way to go before customer-centric e-metrics drive their internal processes and decision making, today’s Web executives are looking forward to capturing even more data, performing deeper analytics and data mining, and dynamically altering site content based on this analysis.

“Let’s have the core data sitting somewhere because the real need is the analysis. We can decide over time what tools we need to actually do the analysis. Over time we’ll gradually add different data sets and different analysis tools. So, it’s an ongoing project. It’s never ever going to stop. It just means that we’ll get very, very sophisticated in the way that we actually see [customers] on a one-to-one basis.” —(Service company)

- **E-Metrics are critical to long-term success.** Without e-metrics, the Web continues to be a grand experiment; a government research project that escaped the lab, mutated, and took over the world. Make money? Sure. Open new territories? Of course. Provide an open channel of communication with your customers? Only if you are good.

With e-metrics, you have the opportunity to approach the Web from an objective, systematic perspective. You can move from trial and error to trial, measure, and improve. You can become a customer confidante, a partner in commerce, and a trusted member of the customer’s value chain.

Closing Thoughts

The course is clear, although it is not effortless. Getting from where you are today to where you need to be to compete will take resources, time, and discipline.

The obstacles and the potential benefits are many, but the whole discussion boils down to two important, all-encompassing issues:

- The business value of knowing more about your customers.
- The need for resources to efficiently unlock that value.

Faster service, lower costs, higher customer satisfaction, improved retention, stronger loyalty — these are the promises of standardizing on e-metric definitions, tracking customers as individuals, leveraging customer profiles, and harnessing the power of the Web to cater to customers in the most effective way possible.

Those who are first to embrace customer-centricity have a front-of-the-line advantage over the laggards. Companies that shift their focus to a customer-centric orientation will find it easier to attract new customers. The cost of switching to another vendor will skyrocket as buyers divulge more information to secure the best discounts and the best services. Converted customers will become less and less willing to start the education process with a competing vendor.

The Future of E-Metrics: The Professional Community

The e-metrics presented in this paper are new and we are all working toward their implementation and expansion. Our vision is to create a community of e-business professionals who are interested in discussing, defining, and debating e-metrics in general. E-metrics will be emerging and evolving for some time to come, and no small group of people will own the great ideas. To facilitate this effort, we have created the Web's first e-metrics destination:

<http://www.netgen.com/emetrics/>

The site is designed to build on our research concepts and includes relevant resources such as:

- **Discussion forums** for professionals to speak their minds.
- A concise **glossary of terms** introduced in this paper.
- **Original content** such as strategies for putting e-metrics to work, data cleansing techniques, and element weighting strategies.
- **Links to further reading** so that you can round out your knowledge.

Our goal is to create a focal point where motivated professionals can contribute to the state-of-the-art in e-metrics. Toward that end, we encourage you to participate by keeping us abreast of your e-metrics efforts and the new formulas, calculations, and insights you discover along the way. We'll see you online!

Appendix: About The Authors

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Matt Cutler co-founded NetGenesis in January of 1994 and serves as chief e-business intelligence officer. He is responsible for leading NetGenesis' marketplace education and standards development efforts. A frequent contributing writer and speaker at major Internet industry tradeshow and conferences, Mr. Cutler's commentary has appeared in the Wall Street Journal, CNN, USA Today, Investors Business Daily, National Public Radio, and numerous other media outlets.

Jim Sterne - jsterne@targeting.com

Jim Sterne produced the world's first "Marketing on the Internet" seminar series in 1994. A consultant to Fortune 500 companies and Internet entrepreneurs, Mr. Sterne has written several books on using the Internet for customer communications. He is an internationally recognized public speaker on Web marketing and customer service.

Special Acknowledgement - Dr. David Reiner

The authors would like to thank Dr. David Reiner for his significant contribution to this research; his editorial contributions proved invaluable to our efforts. Dr. Reiner, vice president of product strategy and development at NetGenesis, holds a Ph.D. in computer science from the University of Wisconsin, and has extensive experience in developing scalable software systems for customer relationship management in financial services, retail, high-tech, telecommunications, publishing, and business-to-business applications.

E-Metrics Solutions for the New Economy

E-Metrics are key performance indicators to measure the dynamics of your on-line initiatives.

NetGenesis provides software and analytic consulting that allow you to dramatically improve the financial performance of your e-business initiatives, by measuring, analyzing and reporting on key business E-Metrics. The NetGenesis Solution lets you quantify the ROI of complex Web initiatives – from marketing spending to site design improvements, to customer acquisition, conversion and retention.

Our E-Metric Consulting Services work with you to identify the right metrics for your e-business goals, determine how to analyze the data, and understand the bottom-line implications for your e-business. The result is a set of measures and reports with insights that allow you to answer vital questions about your customers and online business.



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