Focused e-tail measurement and resource management

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Here is a framework, gleaned from a two-and-a-half-year study, for strategically measuring and evaluating the customer value proposition for anyone living in or entering the e-tail world. The first part provides a measurement structure to fence in the costs of going e-tail. The second identifies a reporting structure to focus succinctly on the financial outcome(s) of management's decisions. E-tailers can use this reporting structure to guide their companies.

The Wild West days of e-tail are over. Gone is the time when dot-coms could freely spend venture capital dollars on weak business plans. Bricks-and-mortar retailers have stopped pouring good money into e-tail out of fear. Today, dot-coms and bricks-and-mortars doing business in e-tail space are responsible for real wealth creation, rather than the anticipated wealth creation witnessed yesterday. But how can a business measure and manage the high cost of going e-tail?

Our findings stem from a two-and-a-half-year case study of a dot-com. The company's identity must remain anonymous. However, a reasonable analogy of its business model would be the concept of selling a standard set of golf clubs, viewed as a simple product, compared to a custom set of clubs, viewed as a complex product, over the Web. Entrepreneurial spirit first brought this e-tailer to life with a clear strategic focus of consolidating the supplier to the retail customer value chain. The Web site went live and first offered simple and complex products in early 1998. Following a typical "launch and learn" strategy, processes were established and formalized during the remainder of 1998 and the first half of 1999. The entrepreneur sold the business within two years and professional leadership was brought in to channel the entrepreneurial spirit into a successful business organization.

The entrepreneur and professional leaders used information supplied by a strategic cost system known as *activity-based costing*, or *ABC*, to steer the business. ABC showed them approximately how much it cost to earn a customer and how the information technology (IT) division consumed resources. It also provided the necessary information to estimate simple and complex product profitability.

The e-tail landscape

In 1999, Jeff Bezos, CEO of Amazon.com, compared the current e-tail landscape to the Cambrian era of evolution—the earliest Paleozoic Era, which began about 570 million years ago. "That was when the earth had the greatest rate of new life," he said. "What people don't know is that it also had the greatest rate of extinction" (Colvin 1999). The popular business press has surely documented both sides of this equation. Stories of outrageous e-tail company valuations, followed by the sounds of crash and burn, have been widely published in the popular business press. Recent history has taught the business world that going e-tail carries many risks and challenges, similar to any new business venture.

Successfully managing an e-tail storefront—the "virtual store"—is a tricky business. Two strategic questions must be faced by all e-tail storefront managers:

- How does one measure the IT and marketing resources necessary to create an e-tail business?
- What is the correct distribution of IT and marketing resources, along with the traditional cost of doing business, for an e-tailer to earn a profit?

Several customer relationship issues also arise with an e-tail business. The opportunity to "sell" to the customer is limited to visual suggestions and text, labeled a "dynamic billboard." Bits and bytes attempt to convey the quality of a product without engaging the traditional senses of touch, smell, or taste. A customer must wait for product delivery rather than simply walk out the door with a purchase. The sales staff do not have the opportunity to "show and tell"; they cannot educate a customer, build a customer relationship, or close a sale, as in a traditional retail transaction. Another challenge is to provide what the customer wants, on a timely basis, with minimal customer effort. An Amazon.com repeat customer can consummate a sale with little effort.

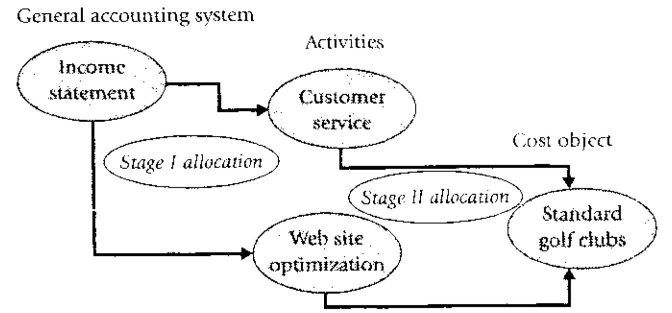
These points suggest that management must work the entire customer value chain to meet customer needs and wants. Bricks-and-mortars have a relationship advantage over the pure e-tailers because they can use their site to get the customer into the store to complete the sale. Yet bricks-and-mortars are at a cost disadvantage because they must incur the cost of building an e-tail presence in addition to maintaining a traditional retail storefront.

If e-tail management can efficiently and effectively overcome these challenges, an e-tail storefront firm offers the potential for substantial financial rewards. Forrester Research and others predict robust e-commerce retail sales growth in the US economy. Online grocery sales could reach $10.8 billion by 2003, and online toy sales could grow to $1.5 billion in 2003. Interestingly, the validity of these projections is a debatable issue.

Measuring e-tail

ABC is an effective and efficient tool for measuring the costs of going e-tail. **Figure 1** provides a visual representation of our e-tailer's ABC system, which follows a two-stage allocation model. In the first stage, data captured in the traditional financial accounting income statement are assigned to *activities*, distinct components of work performed that include several related tasks and work functions. A business leader can gain important insight from this assignment. A traditional general accounting system simply tells management how the business spent money, such as on rent, salaries, and depreciation; it does not offer insight into how these resources were used in providing a product or service. The advantage of a Stage I allocation is that leadership can begin to understand and manage the way resources are consumed by business activities. For example, maintaining a Web site is a typical e-tail activity that consumes substantial resources, such as professional labor, office equipment, consulting labor, computers, servers, cables, and network administrators.

Figure 1
ABC system



In the second stage, costs assigned to activities are allocated to cost objects, which represent what is measured—in this case, a standard set of golf clubs. The advantage of a Stage II allocation is that it shows management the approximate activity resources consumed in providing products. This information can then be used to estimate product profitability—the focus of the next two sections.

E-tail activities

Figure 2 identifies the 12 activities of a typical e-tail business, each carefully defined. E-tail managers should pay special attention to Activities 2, 3, 6, and 7 because they are specific to any business moving into e-commerce.

Activity 2, *Web site optimization*, consists of managing what the e-tail store looks like. This activity consumes substantial resources. A virtual store must always look fresh and inviting if it is to earn first-time and repeat business. The

Figure 2
Activity list

1. Customer service
Activity: Serving the routine customer. E-mail, IT, and phone systems are critical supporting resources. Tasks include:
- Help customers select product or mix of products
- Answer simple/routine questions about phone or e-mail orders
- Place orders for customers, change orders when necessary
- Help customers navigate Web page
- Manage customer order entry problems
- Answer questions about product availability and other requests
- Work with customers regarding damaged goods, discontinued items, backorders, special orders, or returned items
- Often leave workstation to track down why a product did not ship on time, notify other departments of a problem, and interact with other departments on problems, such as damaged goods

2. Web site optimization
Activity: Linking the business model to the customer, measuring what is needed for electronic customer orders. Supporting resources include:
- Electronic order-processing hardware, software, and phone systems
- Time required to review, set up, and maintain Web site

3. Merchandise inventory selection and management
Activity: Building and maintaining inventory on the e-tail Web page. Supporting resources include, e.g., IT server and scanning equipment. Tasks include:
- Attend market/product shows
- Select products and images for the site
- Negotiate contracts and prices with suppliers
- Obtain written approval to scan and place products on site
- Locate unique product requests
- Create/develop new products, such as gifts and/or gift packages
- Create product information
- Scan and annotate images
- Upload images to the system, remove images from the system
- Maintain image backups for current and discontinued items

4. Purchasing and receiving
Activity: Purchasing product inventory, supplies, and production tools and equipment. Supporting resources are space, time, and IT. Tasks include:
- Order items
- Negotiate prices
- Input data into information system (IS), respond to supplier about damaged goods, receive and document goods
- Receiving component—comparing packing list to purchase order to ensure accuracy, filing the received goods in inventory
- Match vendor invoice to PO items received and track order/receiving discrepancies

5. Customer acquisition and retention—paid-for marketing
Activity: Gaining B2C and B2B customers. Space, time, and IT needed. Tasks include:
- Web marketing (AOL, Yahoo!...)
- Traditional marketing (print, radio, TV)
- Negotiate paid-for marketing programs
- Implement customer awareness programs and monthly contacts

6. Retailing
Activity: Gaining store-front retail customers through various business channels: affiliate sales, corporate sales, and B2B sales. Supporting resources are space, time and IT. Tasks include:
- Call on Web site businesses and follow up to inquire about affiliate marketing opportunities
- Research affiliate, corporate, and retail sales as well as marketing trends and techniques
- Prepare affiliate newsletters and collateral material
- Maintain recognition and contact through all channels
- Prepare and maintain affiliate links
- Track affiliate sales
- Make sales calls to respective businesses
- Build relations within specific industries and with specific customers
- Implement customer awareness programs

7. Sustaining information system
Activity: Maintaining basic IS infrastructure and platform. Required resources include the cost of the general ledger, marketing, and production systems, and more. Tasks include:
- Maintain operating system hardware and software, e-mail system, desktop machines
- Answer employee questions, fix and upgrade hardware/software
- Move company forward on IS development projects, e.g., research and use new hardware and software products or add-ins, grow the use of IT so people can work smarter rather than harder

8. Sustaining business—administration
Activity: Running administrative side of company. Supporting resources include space, time and IT. Tasks include:
- Manage office, human resources, and general administrative responsibilities (answering phone, staffing front desk, etc.)
- Manage accounting functions, negotiate insurance contracts, comply with regulatory requirements
- Move company forward on process improvement projects, such as: (1) focus on process constraints and more productive work; (2) work to understand the business focus of the company and how individual responsibilities contribute to success

9. Sustaining business—production
Activity: Running production side of company. Supporting resources include space, time, IT, job costing system, and related modules, such as bar coding and inventory tracking. Tasks include:
- General production management and work force support of production, e.g., answering phone, budgeting, negotiating contracts, complying with regulatory requirements, HRM, running queries to determine production, general administrative responsibilities
- Manage final billing sequence to customers to record sales and settle accounts
- Move company forward on process improvement projects, e.g., focus on process constraints and becoming more productive, understand business focus and how individual responsibilities contribute to success

10. Maintaining facility—administrative
Activity: Maintaining an environment in which to run administrative side of business: rent, heat, lights, etc.

11. Maintaining facility—production
Activity: Maintaining an environment in which to run production side of business: rent, heat, lights, etc.

12. Sustaining business—executive
Activity: Building the business enterprise through executive management and leadership. Supporting resources include time, space, equipment etc.; travel required

Web site must be viewed as a dynamic billboard. For example, IT staff may modify the site's look and feel for the holiday season—just like decorating a traditional bricks-and-mortar store for Christmas. For an e-tail business with many pages built into the site, this is not a trivial activity. Modifying a few pages on a small site is relatively simple, while substantial resources are consumed for any changes to a large site because of the many links to product and service options, search routines, affiliate sites, and the accounting system.

E-business marketing professionals claim that the electronic storefront life ranges from two weeks to six months, depending on the product offering(s). What complicates the work is that the returning e-tail customer must be able to follow a similar, easy click-through pattern to make purchases and to see and feel the new product offerings. The complexity of a Web site, the number of its pages, its level of integration with the accounting and enterprise resource planning (ERP) information system, and the number of changes all drive the activity's resource consumption. Web optimization is a dynamic, ongoing activity, much like managing the traditional retail floor.

A virtual store must always look fresh and inviting if it is to earn first-time and repeat business. The Web site must be viewed as a dynamic billboard.

Activity 3, *Merchandise inventory selection and management,* is similar to choosing goods to purchase and display for a retail store. Inventory selection and management is an observable, straightforward activity in a traditional retail business; for an e-tailer, it is a costly, information-intensive activity that involves (a) selecting items to offer for sale and (b) placing a picture of the merchandise on the Web site. Each inventory item must be purchased, scanned, described, classified, and linked to search options.

This activity is not as easy as it sounds. Scanning a book cover or record label is simple. However, the person creating a 3D image of a high-quality product on the screen must have artistic and IT skills. A golf club must be scanned into the system such that the picture on the Web is nicely representative of its actual size, dimensions, feel, and color. For example, at Chipshot.com (which is not the company profiled in this study), a customer can rotate golf club irons in 3D. If these rotational views are not representative of the actual product, the opportunity to make a sale declines.

IT staff must carefully manage each change to the database, much like adding and removing inventory items from the shelf of a store. Added items must be annotated and uploaded into the system. Obsolete and discontinued ones must be located and removed from the current database and added to the backup system. Staff members must continually monitor the entire inventory to meet the dynamic needs of the customer. Although this activity is similar to a bricks-and-mortar business, the number of inventory items for the e-tailer is typically much greater. Its competitive advantage is the ability to offer a wider selection of products and services to the customer. Our experience at the case study location shows that substantial resources are consumed in offering many of the inventory items pictured on the site.

Activity 6, *Retailing,* is an emerging activity for the pure Internet business. Experienced dot-com leaders have discovered that it is easy to consolidate suppliers and generate substantial product offerings for the customer. An endless selection of products and services are available via e-commerce. It is, however, more difficult for management to generate the sales necessary to justify the infrastructure resources dedicated for this business model. Consequently, a proactive sales force is still required for a dot-com to succeed.

Activity 6 represents e-tail's efforts to move closer to the customer. For example, a dot-com must actively create and maintain affiliate relationships or business arrangements with other Web sites. If a customer clicks through an affiliate site and buys a product, then the site where the customer originated earns a fee or a percentage of the purchase price. Affiliate marketing work consists of research activities, relationship building, speaking arrangements, and more, as described in Figure 2. IT staff must establish and maintain the links between the two Web sites—a distinct challenge because of the continuous changes that occur among sites. Moreover, a significant amount of staff time is dedicated to maintaining relationships with affiliate sites through personal contacts, joint supporting research, and newsletters.

Activity 7, *Sustaining the information system (IS),* is very important to an e-tail business. IT is the backbone of the virtual storefront. To be successful with it, the firm must carefully manage and implement IT changes and updates. A system failure means immediate lost revenue and the potential to lose customers, regardless of whether the Web site ceases functioning for a day, an hour, or a minute. Simply put, for the e-tail business the IS must be absolutely stable. A failure at any time means closing the front door to the business.

Table 1
Golf Design International–ABC quarterly analysis: Based on *capacity* sales volume, full product cost

	CLUB DESIGN DIVISION					
	Standard golf clubs			*Custom golf clubs*		
	Standard set	*%*	*10,000 units sold*	*Custom set*	*%*	*5,000 units sold*
SALES	$100.00	100	$1,000,000	$200.00	100	$1,000,000
DIRECT VARIABLE COSTS						
Material & labor	50.00		500,000	130.00		650,000
Packaging & freight	20.00		200,000	20.00		100,000
Variable costs	70.00	70	700,000	150.00	75	750,000
Contribution margin	**30.00**	**30**	**300,000**	**50.00**	**25**	**250,000**
APPROXIMATE ACTIVITY COST DATA						
Activity costs assigned on units sold						
Customer service	1.18		11,755	1.47		7,347
Purchasing & receiving	0.70		7,054	0.88		4,408
Total	1.88	2	18,809	2.35	1	11,755
Activity costs assigned on capacity						
Web site optimization	3.53		35,294	4.41		22,059
Print & merchandise inventory management	1.47		14,706	1.84		9,191
Marketing & retailing	8.24		82,353	10.29		51,471
Sustaining business—administration	0.88		8,824	1.10		5,515
Maintaining facility—production	0.76		7,647	0.96		4,779
Total	14.88	15	148,824	18.60	9	93,015
Total activity costs	**16.76**	**17**	**167,633**	**20.95**	**10**	**104,770**
ESTIMATED PROFIT (LOSS)	**$ 13.24**	**13**	**$ 132,367**	**$ 29.05**	**15**	**$ 145,230**

E-tail full product cost analysis

A firm's leadership needs the information provided in **Table 1** to make strategic product mix and resource allocation decisions. The table follows a contribution margin format of reporting combined with ABC information, and includes detailed information on selling price per unit, direct costs per unit, and activity costs per unit for both a standard set and a custom set of golf clubs. Total sales and costs at the specified sales volume are also shown. The contribution margin format is not new; along with the contribution margin ratio, it simply shows how much the sale of an individual unit contributes to covering activity costs and profits for each product category. Combining this format with ABC information is what provides useful insight to management.

First to be addressed are the direct costs per unit: material, labor, packaging, and freight. Subtracting direct costs from sales gives the contribution margin per unit, contribution margin ratio per unit, and total product contribution (standard set = $30 per unit, 30 percent, $300,000; custom set = $50.00 per unit, 25 percent, $250,000).

One of the distinct disadvantages in e-commerce is that companies must package and ship their products. So for this e-tailer, the packaging and freight cost of $20 per unit is vital information. These direct product costs reduce the contribution margin, its ratio, and the total contribution margin for each product category. The strategic implication of this insight is that it makes explicit packaging and freight costs decrease profits per unit, forcing management to seek a higher volume of business to make a profit.

Customers sometimes leave a Web site and abandon a full shopping cart just before clicking the "submit" button when they see how much the freight charges add to the total cost of purchase. So a common e-tail strategy has been to offer free or reduced shipping charges to increase sales volume and entice buyers. But such a decision must be carefully evaluated. As Table 1 shows, the result of a "free shipping" strategic decision is to reduce the contribution margin and its ratio on a per-unit basis.

Assume the $100 selling price for a standard set of clubs includes a $15 shipping and handling charge. If management elects to offer free shipping, the selling price drops to $85 for a standard set of clubs. The financial impact of this decision is substantial. The contribution margin

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declines by $15 and the ratio from 30 percent to 18 percent ($15/$85). At a sales volume of 10,000 standard golf club sets, the total contribution margin of $300,000 is cut in half. To make up the lost revenue, the free shipping offer would have to be strong enough to attract additional sales of 10,000 standard golf club units, for a total sales volume of 20,000 sets at $85 each.

This example shows the importance of understanding the contribution margin and contribution margin ratio in any business. Seemingly small changes in the revenue and direct cost per unit model can have a substantial impact on a product line's profitability. It certainly is not intuitively obvious that a $15 decline in revenue would decrease overall profits by $150,000 and require a doubling of sales, from 10,000 to 20,000 units, to make up the decline in the contribution margin. Recent history suggests this level of analysis was a missing component in many dot-com ventures.

The key is for e-tail managers to critically evaluate the decisions that affect the contribution margin. Competition is intense at the retail front and careful actions must be taken in order to keep customers and remain profitable. The $15 demonstration shows that when shipping and handling are part of the e-tail customer value proposition, the advantage of not maintaining a storefront may be quickly offset by other costs. Having to ship a product to the customer creates a distinct cost disadvantage for the e-tail business.

Next, Table 1 recaps key activity costs on a per-unit basis. In reference to Figure 1, the values represented in Table 1 are the result of a Stage II allocation. A cost estimate of key business activities by product line draws management's attention to resource consumption. The first two activities are "customer service" and "purchasing and receiving." Experience shows there is a direct relationship between volume of units sold and the resources consumed by these activities. So these activity costs are treated as variable and assigned on a per-unit sold basis.

Weighting activity costs per unit is an important point to notice in Table 1. The purchasing and receiving activity for a standard set of golf clubs is $.7054; for a custom set, it is $.8816 ($.7054 x 1.25). The more complex product—the customized clubs—is weighted by 1.25 to approximate its greater activity resource consumption. A customer ordering custom clubs is likely to use more of the customer service activity than someone ordering a standard set because of questions about the product. In addition, more purchasing and receiving activity is consumed in managing and handling the custom order.

The remaining activity costs are driven to product categories based on distribution capacity. For example, if Web site optimization has a total cost of $100,000 and the business has a capacity to distribute 20,000 club sets, the activity cost would be $5 per unit. A capacity value estimate plays a significant role in profitability analysis. If the practical distribution capacity is set too low, product cost based on practical capacity is overestimated; if capacity is set too high, product cost is underestimated. As noted above, complex products are weighted to estimate the greater resource consumption by activities.

The distinct advantages of using practical unit capacity as the activity assignment driver are: (1) it sets a standard benchmark for profitability analysis; and (2) it is easily understood by everyone in the business. If activity costs are estimated on units sold alone, the activity cost per unit increases or decreases according to sales volume and does not help management evaluate these costs strategically. Thus, ABC information in a contribution margin format paints a baseline for evaluating the overall business model and each activity.

The next step in the analysis is to run the ABC model with the actual sales volume of golf club sets—in other words, allocate all activity costs based on actual units sold. A distinct advantage of this step is that management can see exactly where the company stands with the activity cost per unit based on capacity, compared to actual units sold. The difference in profits points management in the right direction in deciding where and how much to strategically adjust the business model.

Table 2 illustrates this step. Assume that Table 1 was built on allocating activity cc sts at a capacity of 12,000 standard and 8,000 custom golf sets. At this level, Web site optimization costs $3.53 per unit for a standard set of clubs, whereas marketing & retailing costs $8.24 per unit.

Table 2
Golf Design International–ABC quarterly analysis:
Based on *actual* sales volume, full product cost

	CLUB DESIGN DIVISION					
	Standard golf clubs			*Custom golf clubs*		
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Purchasing & receiving	0.70		7,054	0.88		4,408
Total	1.88	2	18,809	2.35	1	11,755
Activity costs assigned on capacity						
Web site optimization	6.00		60,000	---		---
Print & merchandise inventory management	3.00		30,000	3.75		18,750
Marketing & retailing	12.00		120,000	15.00		75,000
Sustaining business—administration	1.50		15,000	1.88		9,375
Maintaining facility—production	1.40		14,000	1.75		8,750
Total	23.90	24	239,000	22.38	11	111,875
Total activity costs	**25.78**	**26**	**257,809**	**24.73**	**12**	**123,630**
ESTIMATED PROFIT (LOSS)	**$ 4.22**	**4**	**$ 42,191**	**$ 25.27**	**13**	**$ 126,370**

Now let's compare these costs to activity costs allocated on actual sales volume, recapped in Table 2. The cost per unit is substantially higher: $6.00 for Web site optimization and $12.00 for marketing & retailing activities.

Comparing a benchmark to actual results sends a clear signal to the firm's leadership. Managers must critically evaluate the resources dedicated to optimizing the Web site and reduce the spread between a capacity cost of $3.53 and an actual cost of $6.00. This can be done by carefully managing the resources dedicated to optimizing the site and/or increasing sales volume. The same analysis applies to all activities. A distinct advantage of this form of analysis is that by measuring the activity cost per unit at capacity compared to actual sales volume, leaders can focus their energy on managing the activities that consume the greatest amount of resources. Without this kind of measurement, they would only be guessing on how to improve the e-tail business performance.

Table 3 provides a benchmark performance report. For a standard set of clubs, the profit per unit at capacity is $13.24. At actual sales, however, it is only $4.22. This benchmark shows management how much profits can improve on a per-unit basis—in this case, 68 percent ($9.02/$13.24)—with a strategic focus of decreasing costs and/or increasing sales volume. For a custom set, prof-

Table 3
Profit differential analysis

Report	*Standard club set*	*10,000 units sold*	*Custom club set*	*5,000 units sold*
Profit at capacity (Table 1)	$ 13.24	$ 132,367	$ 29.05	$ 145,230
Profit at actual volume (Table 2)	4.22	42,191	25.27	126,370
Difference	9.02	90,176	3.77	18,860

itability can improve by 13 percent. This report suggests to management that substantial profit improvement opportunities exist for a standard set of golf clubs.

In summary, although the reports and respective values used here are for illustrative purposes only, they do show how and why e-tail activity must be closely monitored and controlled. Specifically, management must get its arms around the IT and marketing costs of an Internet business. Once the activity costs are broken down on a per-unit basis at capacity and actual sales volume, leadership is in a position to manage the e-tail storefront strategically. Without this information, managers are not equipped to guide their ship in a very competitive sea.

The risk of entering an e-tail environment is substantial, but so is the potential financial reward. Activity-based costing can play an essential strategic role in building and maintaining a successful e-tail business. Without an ABC measurement system, e-tailers will not be able to manage what they do not know. With it, they can actively lead the firm to higher profitability. ❍

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