
E-business: the illusion of automated success

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Abstract

This article focuses on three specific illusions that helped to cause the "dot.com boom" turn into "dot.com doom". Too many e-businesses thought that building a Web site was the first priority, that so much of the business would be automated, and that competing in cyberspace would be easier. The article explains why these illusions contributed to dot.com failures. Asks what are the quality management challenges that are unique to e-business? Examines six operational aspects, including customer service and support, disaster recovery and security, change management, and distribution. The different levels of challenge are low, medium and high. What determines the classification of level is how much adaptation the discipline of quality management must make to accommodate the unique nature of e-business for each of the operational aspects.

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The USA, 1999: how could anyone fail?

A good idea for a product or service is born. An appropriate, catchy domain name is obtained. In less than a month, the Web site is designed and fully functional. This includes the handling of credit card payments online. Register with one or two popular search engines and perhaps run a few radio or local television ads. No muss, no fuss, no big real estate investments involved to start this business. Just sit back and watch how many hits the Web site gets each day, each hour. Eventually, some of those hits will translate into sales. The more hits, the better because more advertisers will want to appear on the site. Another revenue stream – advertising. Isn't life grand?

Quality? Sure. The Web site is easy to use and customers can contact us by e-mail at any time if they have a problem or suggestion for improvement. There are even plans to add a pop-up customer feedback survey in the near future to determine how well we are meeting our customers' needs! Yes, we want our customers to have a quality experience. With this e-business, we can go so far, so fast . . .

Boom turns to doom

Well, way too many Internet-based businesses went very quickly out of business. It was not their intention to fail. With all the available technology to automate so many aspects of a business, starting or expanding a business on the Internet looked like a "no brainer." Sure, such a business had to be based on a sound product or service idea, but no physical store had to be built and relatively very few employees may be needed. After all, the customer could look at everything offered without leaving their home or place of work or worrying about traffic and finding a parking place. Changing prices, implementing sales promotions, and adding new products and services to the site could be done in no time – online.

Whether you had previous business experience or not, the "dot.com boom" resulted in the "dot.com doom" to many Web-based enterprises. This was true whether you were a "pure" or "hybrid" e-business. (A "pure" e-business' storefront exists only in cyberspace and is represented by the Web site. Amazon.com is an example of a



pure e-business. The hybrid variety involves a brick and mortar (physical) business that extends all or some of their functions to the Internet via a Web site.)

To many brick and mortar operations, offering their products and services online made good business sense. For example, a business selling lamps in a shopping center could create a Web site and attract customers from other cities. The lamps were in the warehouse already for store-based customers. It did not take much effort or expense to adapt specific business processes to support the ordering and shipping of a lamp to someone in another state or another country who ordered online. Most of the infrastructure and business processes were in place for hybrid businesses to venture online. Other aspects that made success more probable for such hybrid e-businesses include their existing brand name recognition, experience in knowing how to tell when inventory was getting low, and how to treat customers properly.

Hybrid e-businesses knew more about total quality management than many pure e-businesses. Whether a hybrid e-business was dealing with unhappy customers or having the product in stock and shipped promptly, their learning curve was much shorter than for pure e-businesses. It is interesting, though, that even when experienced business people left their "old economy" jobs (consulting, managing a bank or factory, and other non-Internet-related enterprises), they often could not make their e-business successful – whether it was of the hybrid or pure variety.

That illusion of automated success lured many business people – including investors. The road to a successful Web-based business was not paved with gold. It was and still is paved with illusions.

Illusion No. 1: first priority – design a quality Web site

If customers find your Web site, make sure it is a "quality" Web site. Hire a good Web designer to make the site user friendly. Incorporate familiar aspects of shopping into the online experience. Let site visitors search, browse, use a shopping cart, review what is in the cart, see the amount of their purchases, give them shipping options, and create an

icon labeled "checkout" that can be clicked so they can complete the transaction. These pieces of functionality were thought to be the key ingredients of a quality customer experience for shopping and ultimately (and hopefully) purchasing online.

That illusion of automated success is best manifested in the design of the Web site. What many e-businesses quickly learned was that a quality Web site does not translate to a quality customer experience. What many pure and hybrid e-businesses forgot was that customers were not transacting business with the company's Web site, but with the company. When customers enter a store or call on the telephone to order products or services, they are interacting with the various business processes such as ordering, obtaining credit, billing, and handling customer complaints. So many Web sites were not initially designed based on the way a business actually operates. By the time the Web site was improved, it was frequently too late. There were many other Web sites potential customers could try – once your site, your offer, or both had not impressed them the first (and only) time around. To avoid succumbing to this illusion, the first operational priority is to plan your e-business operation. Here are three basic steps to follow prior to building the Web site:

- (1) Design and document your operational processes.
- (2) Identify what steps can be mechanized and which must be performed by a person.
- (3) Then determine the functionality and design of the Web site to support the different day to day operational processes.

From this information, better Web site functionality and design decisions can be made.

Illusion No. 2: so much of e-business is automated

E-business just looks awfully automated. It just seems to be a vending machine for information in cyberspace. Getting an online order from point A to B in a process may be automated but downstream at point E, a person will have to print out an order either to check inventory or pack up the contents for shipping. That is the good news. What if the

product is not in stock? Someone will have to get involved in the process to notify the customer that the product is not available and also contact the supplier to reorder. The degree of automation is an illusion. There are lots of manual processes involved in e-business. After all, a person needs to answer customer e-mails and telephone calls (if the site offers a number to call).

The anticipated efficiencies of automation in e-business are offset by three inherent risks:

- (1) Eliminating the "middleman" between your company and the customer.
- (2) Having customers directly participate in many of your internal business processes.
- (3) Being so vulnerable to the prying eyes of the competition.

Traditionally, a store employee or sales representative on the telephone serves as the middleman during a transaction with a customer. This intervention takes many forms including explaining the bill, answering a question about the product, correcting a system error on a customer's account, or processing an order. That employee can make or save a sale.

E-business has done a great job of automating much of this intervention – but you can only automate so much. Customers still want to be able to reach a person (by e-mail or telephone). If the customer does not want to go to the trouble of e-mailing or calling though, she/he can easily click to another site, or just return the merchandise, or never use your online service again. Both pure and hybrid types of e-businesses lose potential and repeat customers everyday and do not know why. The sales person in the store or telephone sales representative can frequently tell you why the customer was dissatisfied and therefore canceled the order. The Web site is not as reliable as the traditional, unautomated middleman.

The second inherent risk associated with the seemingly high degree of automation associated with e-business is that what was traditionally an internal business process is now quite public and there is no time for training the user. Whether it is your company's online process for reserving a book that will be published next month or another process for canceling an order, online customers are now using your systems as only employees once did. There is no opportunity to train Web site visitors

how to use your automated business processes. At least, for traditional businesses, employees received training (formal and on-the-job) about how to check the status of an order and correct a customer's bill. An e-business's critical operational processes need to be designed so just about any site visitor can successfully navigate. Web sites need to be designed for the masses who should be able to intuitively get through the different business processes. This is an inherent risk of automation and a continuous challenge for those managing quality in an e-business.

Illusion No. 3: it is easier to compete effectively

Last, but not least, with your key business processes on public display in cyberspace, your e-business is very vulnerable to the prying eyes of the competition. Who knows if that site visitor is a potential customer or the competition? The inherent risk is that the competition figures out what you do well and duplicates it or improves it. On the other hand, the competition can also determine from your Web site what your e-business does not do at all or does poorly. The continuous need to differentiate in cyberspace is accelerated by the nature of doing business over the Internet. Change occurs much more quickly for e-businesses. It may be easier to update prices and implement promotions, but your competition, global as well as local, can check your site every few days to determine what marketing and operational changes have been made. A local restaurant may notice a new, competing restaurant being constructed across town. This local business has some time to figure out if that other restaurant really poses a threat and, if so, has time to start developing a strategy to effectively compete. In the world of e-business, your new competitor could appear tomorrow morning and really be based across the country or on another continent. The Internet collapses time and space and makes maintaining a competitive edge much more challenging for e-businesses.

Automation has some real advantages and disadvantages. E-businesses are not totally automated, the processes need to be designed

for use by the masses, and competitors are part of those masses.

What are the quality management challenges unique to e-business?

To answer this question, let us look at six operational areas and classify the level of challenge each presents to those managing quality in an e-business. Three levels of classification are used:

- (1) "High" indicating that much adaptation is required on the part of quality management due to the nature of e-business.
- (2) "Medium" reflecting that some adaptation will be needed but the basic, established quality principles can be expanded to meet the e-business operation's needs.
- (3) "Low" which indicates little or no change will be needed to apply the principles of quality management to e-businesses.

1. Customer service and support: medium challenge for quality management

Although more automated and information-intensive than most manufacturing and service-based enterprises, e-businesses still need to figure out how to build quality customer service and support into their business operations processes. This is rated a "medium" since the Web site is a new aspect of customer interaction to manage. Many of the basic principles of good customer service seen in a mom and pop grocery store do apply to e-business. The advanced technology gives customers more ways to communicate with the company via the Web site and e-mail, but good old-fashioned courtesy and accuracy in all customer interactions online and off-line (via the telephone and with the person delivering the package) still apply to e-business. This is a "medium" challenge for two reasons:

- (1) E-businesses have to learn and continuously improve how to incorporate quality customer service and support using a new technology – a Web site.
- (2) All forms of quality customer service and support need to be successfully integrated across business processes – online and off-line.

2. Quality of products and services: low challenge for quality management

The methodologies needed to ensure the quality of the manufactured car, delivered newspaper or landscaping performed by a contractor still apply to e-business. Many such businesses utilize their Web site to take orders, to share what products and services are available, and to inform visitors about what and how their company is doing. The Web site is a channel of communication and interaction and, for many e-businesses, it is an additional way to connect to their customers.

Whether a company offers only a printed version of the local news delivered to your doorstep or offers both a printed and online version, what it takes to ensure quality news reporting and delivery is still applicable to e-business. The speed at which the Internet environment operates is certainly faster but adjusting to such changes brought about by technological advancements in communications is something to which newspaper publishers and other businesses across industries have always constantly adapted. E-business is just another opportunity to adapt and, hence, is rated a "low" challenge.

3. Quality of technical infrastructure: low challenge for quality management

This operational area has also been classified as a "low" challenge. Businesses always have had to adapt to new technologies like new machinery, the introduction of toll-free 800 numbers, and the emergence of sophisticated automatic call distribution telephone systems for call centers. Part of the decision to use the newer technologies involves planning how to keep such infrastructure up and running efficiently and effectively. Creating and maintaining a Web site and integrating it with existing systems is doing what businesses always have done – evolve with the technology.

4. Supplier management, inventory management, and distribution and logistics: low challenge for quality management

These operational areas have been grouped together since they are frequently so closely related. As with the evolution of improved communications technologies and manufacturing processes, businesses have adapted. What it takes to manage suppliers

effectively and ensure quality in the areas of inventory management, distribution and logistics still applies to e-businesses. Because the traditional quality principles in these operational areas are still relevant to companies operating all or in part from a Web site, this has been rated a “low” challenge for quality management.

5. Security and disaster recovery: high challenge for quality management

The engine of an e-business is the Web site. In a factory, if the plant machinery breaks down, production will slow down or stop and the damage can be assessed and repairs begun. Adjustments in schedules can be made. Instead of 50 cars coming off the assembly line, only 33 will make it today. Let people work some overtime to make up for the lost production during the normal shift.

A call center’s telephone system has technical problems as evidenced by the number of calls in a queue increasing and there are sales representatives sitting there idle waiting for a call! Again, order processing slows down, arrangements are made to identify the problem and fix it, and schedules are adjusted.

What makes security and disaster recovery a “high” challenge for quality management is the heavy dependence on the vulnerable Web site. What are the indications that there is a problem with the Web site’s performance? Is a security breach causing response time problems? Is the root cause associated with a virus from another country? Although traditionally not an area of operational responsibility, problems with the Web site translate to a huge operational challenge. Why? Because if the engine of an e-business is the Web site, then the “stuff” of production is information. Yes, the information technology department has responsibility for ensuring the site is up and running along with the various support systems and interfaces with internal and external (e.g. suppliers) organizations. But without efficient production of information “products” (i.e. orders, search requests), there is little or no e-business going on! And it is worse than the situation when a factory’s only machine is out of order. The e-business relies so heavily on technical infrastructure, that it takes time to detect a problem, identify the root cause, and implement a fix. Given the global and fluid nature of information processing on the

Internet, e-businesses are quite vulnerable. Building quality into the security and infrastructure performance of an e-business indeed deserves the rating of “high” challenge for quality management. It is more than fixing computers and networks. From an operational standpoint, what was the last order to have been sent to the warehouse? If the site is down for an extended period of time, what orders may not be delivered when promised? Should customers be notified by e-mail of a possible delay? Should whoever is responsible for delivering what was ordered be notified of the problem? Whether an e-business does their own delivery or uses a third party company, what adjustments need to be negotiated?

E-business is so information-intensive that overcoming obstacles to efficient production of seemingly intangible information products (e-mails, search requests, etc.) is a daunting daily challenge. Root cause analysis of a problem needs to be quickly conducted so the problem can be resolved. Are there operational processes in place for handling such exceptional occurrences? Are these processes documented? It certainly is important. No hits means no visitors means no business being transacted. The global nature of information processing on the Internet increases the vulnerability of an e-business – 24 hours a day, seven days a week.

6. Change management: high challenge for quality management

This operational area has been rated a “high” challenge for quality management because the level of efficiency and effectiveness associated with managing information changes is continuously evident to customers and competitors alike. The processing of information from the Web site is used to support both online and off-site production of goods and services. For many e-businesses, providing the information or service online via the Web site is the whole purpose of their business. It is not just the Web site’s content that needs to contain the latest promotional discount percentages that will last for one week. What about the other systems and people who use that information in answering customers’ e-mails or telephone inquiries or systems that calculate the total amount due? E-businesses rely so heavily on automation that knowing what data needs to be updated

(in what paper job aid and in what database) is only surpassed by the challenge of keeping all that data in sync. Post one price on the Web site and have the customer get a higher price included on the bill, and that could translate to a lost customer.

The risk could even be greater for hybrid e-businesses. If a customer is dissatisfied with how you post one price on the Web site and charge the higher one, visiting your brick and mortar stores in the future may be out of the question for that customer.

Here is another example: a customer notifies you of a change in address. One database is immediately updated, while the other three containing such account information are not. There is a chance that the customer's next order could go to the old address. What makes change management so challenging is the emergence of a quality issue whose time has finally come: data quality. Much has been in the press about how companies want to manage only one centralized customer database in order to better ensure that the most recent and accurate account information is available. Other companies sell services and software to "clean up" your e-business data. Viewed as a production quality issue, e-businesses' major challenge is continuously improving data quality. That means keeping data in sync and current across databases, systems and their associated paper products (e.g. training manuals or price lists given to suppliers and customer service representatives). This is made even more challenging by the speed of change that is so characteristic of the Internet operating environment.

Quality management cannot be automated. Yes, inspection can. Creation of control charts can. But the management of quality of such an intangible "material" known as data or information cannot be automated. What e-businesses can do to continuously improve data quality is apply the basic principles of process quality management:

- continuously measure how a sampling of data across data repositories compares (this includes paper repositories like mailing lists, price lists and training manuals);
- find the root cause(s) of the deviations;
- implement changes to the process(es) that created the deviations; and

- continuously measure if the anticipated improvement occurs and is sustained over time.

This quality management process is as old as manufacturing and yet, it still applies to the high tech world of e-business! Due to the high speed of processing something as intangible as information, following these long established principles of process quality management becomes even more important to the daily e-business operation.

Just as business needs to evolve to adapt to changing technologies and new customer needs, the emergence of e-business requires quality professionals to adapt to this new operating environment. There are challenges to the discipline of quality management but these are manageable. As summarized in Table I, two of the six operational areas present a high level of challenge for quality management. But, for all six areas, the basic established principles of this discipline are still applicable to the arena of e-business.

Summary and conclusion

Most people in the industrialized world are familiar with the "dot.com boom" and the subsequent "dot.com doom" that, most vividly, occurred in the USA over the past few years. The Internet permeates our daily lives. Even if a company only implements a Web site as a public relations tool and not for taking orders, the importance of quality cannot be underestimated. The Web site is an extension of the company; sometimes, it is the only physical evidence of the company.

If nothing else, this cyberspace world of information vending machines manifested in the form of thousands and thousands of Web sites screams for the application of quality management principles. Information is

Table I Levels of challenges for quality managers in e-business

E-business operational area	Level of challenge
Customer service and support	Medium
Quality of products and services	Low
Quality of technical infrastructure	Low
Supplier management, inventory management, distribution and logistics	Low
Security and disaster recovery	High
Change management	High

seemingly intangible. Web sites are the assembly lines for producing information products like orders and e-mailed responses to customer inquiries. If the Web site is down or underperforming, it is worse than being that factory with only one machine – and that machine no longer works. The managers of that factory know what the problem is – the machine – and can replace it or get qualified people on site to repair it. Adjustments can be made to the production and delivery schedules because the managers can estimate how behind they will get if the machine is not fixed by the next shift.

For an e-business, though, being aware of a problem is often a challenge given the seemingly intangible nature of what is being produced – information. Finding the root cause of the problem could lie in your server, your Internet service provider's network, or some other computer or network on the Internet. Estimating downtime is difficult. Implementing a sustainable fix to get the Web site fully operational is also often difficult. Where in the production process are those online orders that were in the midst of processing when the Web site crashed? How many orders are being lost because visitors cannot access the Web site?

Yes, e-business was an illusion of automated success! How much of an illusion is explained by three specific illusions:

- (1) that the first priority of an e-business would be to design a quality Web site;
- (2) that so much of e-business is automated; and
- (3) it is easier to compete effectively.

E-business is first and foremost a business operation that needs managing. What an e-business does is produce information to support other online and off-line activities. Like any operation, it needs to be planned. How customers will interact with your company is best represented in documented processes of how an inquiry is to be handled, an order processed, inventory checked, etc. Before designing the Web site, design the processes that will be required on a daily basis

to serve customers and produce your products and services. Identify which steps of the processes can be automated and which steps involve a person. This way, designing the Web site will be in the context of the end-to-end view of the scope of customer interactions with the company and the processes associated with the production of the e-business's products and services. Although information-intensive, e-businesses are not totally automated. Planning is required for the e-operation that involves mapping out in enough detail the different customer-related and product/service production processes to reveal just what can be automated and what cannot.

E-business brings some new challenges to quality management. Some operational areas offer greater challenges than others. Due to the unique nature of e-business, the greatest challenges to quality management are in two areas:

- (1) security and disaster recovery; and
- (2) change management.

The immense impact of the Web site on customer service and support makes this operational area a medium-sized challenge to e-business quality management. Ensuring the quality of products, services, the technical infrastructure, and the processes that support supplier management, inventory, distribution, and logistics requires little or no change in the way these areas would be quality managed for traditional businesses which do not have a Web site presence.

Quality management cannot be automated. Not all steps of a process can be automated. Every business needs people and proven methodologies to manage the quality of the operation. Business success is never easy or guaranteed. E-business is no different. Yes, it is more automated. Yes, there are fewer obstacles to starting an e-business than a traditional brick and mortar one. Success in e-business is not an illusion. It takes a lot of hard work – just like any other business. Applying the principles of quality management will only make the job easier.