



E COMMERCE

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Prepared for:

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Executive Summary

Purpose:

This report reviews the MIS options a CIO must review and evaluate when looking into developing an E-Commerce website for their corporation. Several options are available, and there are vast amounts of technology and resources available to assist in the choice and development of any E-CommCIO steps necessary in selec

ting an alternative and the ideal components to review.

Research:

The data reviewed and studied are extensive and essential for E-Commerce developments. The Appendices include detailed descriptions of available technologies and resources available for the CIO to develop an E-Commerce solution for his corporation. Our analysis details sites and resources that CIO's should always review and evaluate to make a sound practical choice for an E-Commerce solution

Recommendations:

Fundame

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1. Introduction

In this report, we will be discussing E-Commerce, a phenomenon born with the Internet used by many small and most large corporations to add value to their businesses. We will present a managerial and business discussion that explores today's popular E-Commerce Business Models, and common concerns of a company ready to formulate an E-Commerce business plan. We also present a slightly technical discussion on available E-Commerce technologies that today's CIO's have available and the consequent Make vs. Buy decisions, with which management is faced. Afterwards we will present a list of action items a CIO can follow to implement a successful E-Commerce presence on the Internet.

2. E-Commerce -What is it?

Filling a Need and Opportunity

From the mid 90's to the current day, we have witnessed the explosion of the Internet, a small network of early computers, from the back rooms of the military and universities into the everyday consumer and business realms. The computer and communication technology have matured to enable the Internet to stretch into a global network of personal and institutional computers. This has become a more easily accessible form of communication, which many companies have seen as an opportunity for growth or improvement in various aspects of their business. They have recognized opportunities for sales of products and services 24 hours a day, 7 days a week. This same prospect exists for their technical support and advertising. These newfound abilities are giving some organizations the chance to essentially operate non-stop, while they reach out to a global marketplace of willing customers. Some companies can even operate without the traditional, capital-heavy, brick-and-mortar model, depending on the business plan they are following. Since the major purpose of management in a company is to increase shareholder value, the more of these commercial abilities management can leverage to this end, the more successful their companies will be.

E-Commerce is the term used to describe “the buying and selling of goods and services over the Internet”¹. Buying and selling a good or service also includes all the aspects mentioned above, such as advertising the good and supporting the sale. E-Commerce is the business concept that has grown from these online abilities, creating a thirst for new opportunities, and as a result, a large number of technologies now exist to extend a company's reach into the opportunities the Internet has to offer. For a company to take full advantage of E-Commerce, they must first consider a few aspects of E-Commerce, such as whether available business models will fill the company's needs, or whether innovation is necessary. Once a high-level business model is chosen, the CIO can look on a more-technical level to understand the available technologies use to implement the various aspects of E-Commerce. Let's first look at common business models, then we can look at today's technologies more closely.

¹ www.Dictionary.com, <http://dictionary.reference.com/search?q=e-commerce>

3. Determining an E-Commerce Business Model

When a company is exploring E-Commerce alternatives for the first time and when it is redesigning its current approach, it always needs to determine a business strategy for the effort. This high-level, direction-determining research and design effort will ideally position the company in a much more profitable, highly –competitive position, whether the goal is to increase profits, minimize costs, increase market share, etc... When doing so, a company needs to look at a few fundamental requirements for a successful strategy. They need to:

- Ask themselves “What Business Are We In?”
- Explore & understand successful and unsuccessful business models
- Explore the technologies and costs necessary of appealing models
- Choose or Create one that is most appropriate for the Company

In the following sections, we discuss each important aspect of this process.

A Note on Unsuccessful DotCom’s

Often times knowing what “not to do” is just as important as what to do. Below we briefly look at some mistakes of the DotCom era before going on to successful approaches.

During the Internet bubble of the late nineties, as many know, the irrational exuberance displayed by stock consumers hoping to ride the DotCom rocket to profits, is a good, personal finance allegory to the dangerous approach to business decisions that owners of those DotComs were making. Instead of taking the time to ask such questions as “What Business are we REALLY in?”, many owners and managers made un-researched gambles on business models not founded in traditional, “tried and true”, business fundamentals. Nicholas Carroll of Hastings.com has this to say:

“Selling over the Internet is a radically new playing field. This does not mean an E-Commerce business should be radical from A to Z. On the contrary, it means that an E-Business should use established business knowledge for all it is worth, to balance out the uncertainty of the new playing field. As witnesses to history (we’ve watch San Francisco Bay

dot-coms auger in by the dozens), we will state flatly that success depends on more than a good web site and lots of visitors. It also depends on getting the back end right.”²

With the Internet being so new and many overnight millionaires, it’s easy to see the temptation to hurry to get a new E-Commerce solution to market, but the result is a very risky investment. Now that the bubble has burst, and many businesses and managers have learned some terrible lessons, while a few prospered, managers and owners will be return to more thorough analyses of their business plans.

What Business Are We in?

One of the pitfalls companies have to be careful of when exploring E-Commerce is losing sight of their core business goals. Whether they are developing a business that has its largest sales channel built around E-Commerce or they are an existing business simply trying to extend their reach into E-Commerce, companies can ensure a much higher probability of success by always paying attention to core business operations. Earl Johnson of Joe.org writes in his commentary:

“What makes some businesses survive so successfully over a long period of time? A study addressing the question of business longevity was the topic of a recent newspaper article (Jennings & Grossman, 1995).

The research study examined eight U.S. industrial firms which had paid at least an annual dividend to stockholders for 100 years or more. These companies were Pennwalt Corp., Singer, Pullman Inc., Scovil Inc., Diamond Match Co., Ludlow Corp., Stanley Works, and Corning Glass Works. The article compared success of these companies over the long haul to that of Tony Bennett, a singer whose on-going career dates back to the 1950s.

These firms and Tony Bennett have survival in common. The factors accounting for this survival are addressed in the article.

² “Successful E-Commerce Business Models: The Business Is Still More Important Than the Web Site” By Nicholas Carroll,, <http://www.hastingsresearch.com/services/business-models.shtml>

The companies all held fast to a WBAWI?--or "**what business are we in?**"--philosophy. Each of the eight firms "knew their strengths, developed strong market presences based on these strengths and never forgot their roots."³

Though this article addresses the drift that companies can experience to extended markets on the whole, it communicates very clearly that success can be reached more often by staying focused.

Successful E-Business Models

Now that the Internet is somewhat more mature, and successful business models have been weeded of the unsuccessful ones, several categorizations have been performed of E-Commerce business models. Below is one list of the many existing business model delineations available. This one form, described in detail in [Internet Business Models and Strategies: Text and Cases](#)⁴ is wide-ranging and comprehensive.

Brokerage

Brokers are market-makers: they bring buyers and sellers together and facilitate transactions. Brokers play a frequent role in business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. Usually a broker charges a fee or commission for each transaction it enables. The formula for fees can vary.

Advertising

The web advertising model is an extension of the traditional media broadcast model. The broadcaster, in this case, a web site, provides content (usually, but not necessarily, for free) and services (like email, IM, blogs) mixed with advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. The broadcaster may be a content creator or a distributor of content created elsewhere. The advertising model works best when the volume of viewer traffic is large or highly specialized.

Infomediary

Data about consumers and their consumption habits are valuable, especially when that information is carefully analyzed and used to target marketing campaigns. Independently collected data about producers

³ "What Business Are We In?" By Earl C. Johnson. <http://www.joe.org/joe/1995october/comm2.html>

⁴ [Internet Business Models and Strategies: Text and Cases](#) McGraw-Hill: Columbus Ohio. Dr. Allan Afuah, Dr. Chris Tucci

and their products are useful to consumers when considering a purchase. Some firms function as infomediaries (information intermediaries) assisting buyers and/or sellers understand a given market.

Merchant

Wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction.

Manufacturer (Direct)

The manufacturer or "direct model", it is predicated on the power of the web to allow a manufacturer (i.e., a company that creates a product or service) to reach buyers directly and thereby compress the distribution channel. The manufacturer model can be based on efficiency, improved customer service, and a better understanding of customer preferences.

Affiliate

In contrast to the generalized portal, which seeks to drive a high volume of traffic to one site, the affiliate model, provides purchase opportunities wherever people may be surfing. It does this by offering financial incentives (in the form of a percentage of revenue) to affiliated partner sites. The affiliates provide purchase-point click-through to the merchant. It is a pay-for-performance model -- if an affiliate does not generate sales, it represents no cost to the merchant. The affiliate model is inherently well-suited to the web, which explains its popularity. Variations include, banner exchange, pay-per-click, and revenue sharing programs.

Community

The viability of the community model is based on user loyalty. Users have a high investment in both time and emotion. Revenue can be based on the sale of ancillary products and services or voluntary contributions.

Subscription

Users are charged a periodic -- daily, monthly or annual -- fee to subscribe to a service. It is not uncommon for sites to combine free content with "premium" (i.e., subscriber- or member-only) content. Subscription fees are incurred irrespective of actual usage rates. Subscription and advertising models are frequently combined.

Utility

The utility or "on-demand" model is based on metering usage, or a "pay as you go" approach. Unlike subscriber services, metered services are based on actual usage rates. Traditionally, metering has been used for essential services (e.g., electricity water, long-distance telephone services). Internet service providers (ISPs) in some parts of the world operate as utilities, charging customers for connection minutes, as opposed to the subscriber model common in the U.S.

One more interesting categorization focuses more on product/service and whether the model is B2B or B2C as the main criteria for distinguishing features among varying business models.

Below is Witiger's summary of all the E-Business Models⁵:

First, divide the list according to whether it is a physical product or a service - many services can be sold online and are unique to the Internet world, many of the products sold online simply use the Internet as another form of advertising and the "model" is not so special.

The **second** thing to do is divide the list according to whether the product/service is for business2business purposes, or for consumers direct - the differences are huge. An online website listing plastic autoparts will require a completely different model than a website selling DVD movies to individual customers.

- **Product**
 - **B2C-Consumer Product**
 - The Web Catalog Model
 - Through a Broker, or Portal
 - **B2B-Industrial Product**
 - Through a Broker, or Portal
 - Through an Industry Association Portal
 - Through a Third-Party Intermediary
- **Service**
 - **B2C-Consumer Service**
 - Advertiser pays, viewer sees content free model
 - Subscription based revenue models
 - Advertising-Subscription Mixed Model
 - Fee-for-Transaction/Services Models
 - **B2B-Industrial Service**
 - Subscription based revenue models
 - Fee-for-Transaction/Services Models
 - Through an Industry Association Portal
 - Through a Third-Party Intermediary

⁵ "E-Business Models", By W. Tim G. Richardson, Toronto, Canada <http://www.witiger.com/E-Commerce/business-models.htm>

As demonstrated above, there are many ways to differentiate between business models. They boil down to intentional methodologies that a company can use to focus their business decisions in a conscious manner towards maximizing shareholder value with the use of E-Commerce. What is really important here, is that management researches, chooses (or creates), likes, and understands the most applicable model to their business that they can for their own strategic E-Commerce decisions.

Common Business Discussions on E-Commerce

When companies look at E-Commerce, they are often also presented with decisions such as with the dangers of opening a competing channel with current distribution, whether to have virtual offices, and even patent opportunities on business models. We touch on these topics here to make CIO's aware of the need to address them.

Channel Conflict and Cannibalization

What happens when an existing manufacturer or retailer explores E-Commerce as an avenue for sales? Their existing distribution channels suddenly see new competition on the block:

"There's a reason that retailers are so hesitant to push their online channels. They're worried about cannibalizing their existing store traffic. And it's no small concern. To the consumer, a dollar spent at a Web store is the same as a dollar spent at the traditional store. But the retail community isn't ready to see it that way. Many retailers -- and their employees -- see even their own Web sites as new competition. "Retailer CEOs have to cope with the fact that their downtown store may take a hit when the online store opens,... Many companies, even as they forge ahead online, are clearly treading lightly to avoid this problem. Home Depot's relaunch of its Web site is designed to "drive traffic into our stores," execs say."⁶

It is a real challenge for management to figure out how to approach this effort. Some companies only use it for advertising in order to refrain from competing at all with their distributors. Some retailers allow the store manager to decide how they will cooperate with the

⁶ "Time for Retailers to Face Their Web 'Terror'", Business Week: Ellen Newbourne
<http://www.businessweek.com/ebiz/9907/ep0705.htm>

online retailer. For example, some retailers will not lower their in-store price on an item that also exists on the corporate website at a cheaper price. Yet there are some stores, like K-Mart, that have kiosks in their stores that encourage online shopping. Management will need to fully understand the rippling ramifications of introducing a sales venue in a situation with preexisting channels.

Virtual Companies

For new startups that don't have a lot of capital to purchase physical space, machinery for production, and budgets for the overhead of personnel, creating a virtual company is very appealing. With an Internet connection, a couple of phone lines, and good relationships with suppliers and other services, a company can operate profitably with low investment. This isn't a new phenomenon with the advent of the Internet, but it has made it very easy for startups to get mass-market and cheap advertising. In an experience with a virtual company, Marty Nemzow with Computer Publishing Group describes:

"When my order arrived the following day via United Parcel Service marked from a local supplier with no likely relationship with Dialtone, [the online store], I saw the virtual business. I gave Dialtone a call and spoke with one of the owners, Jim Donovan, who confirmed my suspicions. This company represents a new breed of middlemen without physical assets, but who have at their disposal a network of suppliers, experience and the valuable properties of a Web site: toll-free phone lines and a good reputation for fulfilling orders. They represent the ultimate in efficiency because they hold no inventory, therefore, avoid getting stuck with outdated products or falling prices, and they can ship from the closest or most cost-effective supplier."⁷

Brick and Mortar aren't necessary anymore for some businesses, which creates a very low barrier of entry for some markets. A hybrid exists, called "Click and Mortar", businesses that have both strong online storefronts in addition to the traditional investments in property and equipment.

⁷ "The New Virtual Business;" By Marty Nemzow; Computer Publishing Group.
<http://webserver.cpg.com/wb/3.8/>

Patenting Business Models

Over the past few years, some corporations have been patenting methods of business used on their websites. These methods are seen as value-adding, thereby they present some competitive advantages and thus are patented. Though some of these companies see this is just another measure to inhibit competition, some feel that the more common website practices should not be allowed to be secured by patent.

“* Amazon.com owns a patent on their "groundbreaking" idea of one-click ordering: This is the idea of placing a button on your Web site that allows ordering without entering credit card details every time you place the order.....

The USPTO granted patent number 5,960,411⁸ on 9/28/99.

* ... Amazon.com received a patent on "affiliate programs": The idea of issuing someone commissions as a reward for all sales that have been generated by a hyperlink from their site to yours....

The USPTO granted patent number 6,029,141⁹ on 2/22/00.”¹⁰

So, in addition to products and services being patentable, one can patent some business models or features of a business approach. If management does create some unique feature of their website that would justify the expense of filing for a patent, it is possible. Currently Amazon.com has a total of 41 patents registered¹¹.

⁸ [www.uspto.gov PN/5,960,411 <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=5,960,411.WKU.&OS=PN/5,960,411&RS=PN/5,960,411>](http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=5,960,411.WKU.&OS=PN/5,960,411&RS=PN/5,960,411)

⁹ [www.uspto.gov PN/6,029,141 <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=6,029,141.WKU.&OS=PN/5,960,411&RS=PN/6,029,141>](http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=6,029,141.WKU.&OS=PN/5,960,411&RS=PN/6,029,141)

¹⁰ “Patents on Internet Business Models” By Nicholas Schmidt. Cybersavvy UK.
<http://www.webpr.co.uk/news/patents.asp>

¹¹ [www.uspto.gov AN/”Amazon.com, Inc" <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=%2Fmetahtml%2Fsearch-adv.htm&r=0&p=1&f=S&l=50&Query=an%2F%22Amazon.com%2C+Inc%22&d=ptxt>](http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=%2Fmetahtml%2Fsearch-adv.htm&r=0&p=1&f=S&l=50&Query=an%2F%22Amazon.com%2C+Inc%22&d=ptxt)

4. E-Commerce Technologies

Now that we have seen some common business models for E-Commerce, we will discuss E-Commerce technical requirements on a lower-level (please see Appendix A for details). This analysis takes a tour of the various pieces of technology that come together to create the online commerce experience. It begins with the fundamental operational components and then discusses the components necessary to implement common E-Commerce related items, like shopping carts, customer interfaces, etc... Though we understand some readers of this report may be fundamentally aware of many elements associated with the Internet, we will address some elemental concepts as if the reader is not aware of them. This will fully present the information required and steps necessary to completely create a successful E-Commerce presence. Please see Appendix D for a diagram showing the relationship among the components we will discuss. The four fundamental categories we will discuss are:

- Website Management
 - URL's and Hosting Technologies
 - Website Development Packages
 - Graphics Packages
 - Document Sharing
 - Scripting Languages
- Database Management
- Transaction Management
- Support Management
- Advertising – Driving Traffic to your Site
- Tailoring the Customer Experience

Website Management

In order for a company to conduct business over the Internet, they first must get the fundamental requirements necessary to operate on the Internet secured. Those components are a URL and a host. They can then leverage various development technologies to manage their Internet presence.

URL's

A URL is a unique “Uniform Resource Locator”, which, though it could be a direct Internet Protocol address, like 192.168.0.254, is usually a domain name, like www.companyname.com. For a nominal annual fee, companies can rent domain names from a variety of domain name registrars, all of whom are listed with InterNIC (<http://www.internic.com/>).

Hosting Technologies

When customers type a domain name in to an Internet browser, it looks up the domain name and gets directed to the IP address of the website’s “host”, the physical computer onto which all of a website’s files, like pictures, documents, etc... have been stored. Hosts can come in a variety of implementations, several of which are discussed here²:

Operating Systems: The two most common operating systems are Windows Server (Windows NT and 2000) and versions of UNIX (LINUX, Sun, and BSD, to name a few). Keep in mind that choosing an operating system also forces you to choose between some features such as whether you’ll be using ASP, Access databases, etc...(all to be discussed later).

Dedicated vs. Virtual: Next companies can host their website on a dedicated server, a computer that does nothing but hosts one website only. Or a virtual server where you’ll be sharing the computer’s hard drive space, Ethernet bandwidth, etc..., with other websites. The fundamental driver in this decision is cost; the dedicated servers are much more expensive, so many companies use virtual servers until the site grows so large that it needs have its own dedicated server. When renting the website’s hosted space (as opposed to owning it), “dedicated” is also synonymous with a company leasing a whole server to themselves; and hosting all their websites on that one server, as opposed to hosting all their websites on a bunch of virtual servers.

Owning vs. Renting: Depending on how hands-on a company wants to be and how much money a company wants to spend paying an outside company to manage the

hosting of their site, a company may rent hosted space on a server from a hosting company, like Verio (www.verio.com) or iPowerWeb (www.ipowerweb.com). If a company chooses to host its own servers, it will lease a dedicated IP address from its Internet Service Provider (ISP), install a server, and route the domain name references to their own server.

Website Development Packages

After a server has been setup and a domain name purchased, the company will more than likely choose a website development package to create their site, because all it initially has is an “under construction” page at this point. Some old-school programming gurus prefer to create everything in HTML (the basic code used to create web pages), Java, Javascript, PHP, etc... using a text-based program, like notepad. Though this can be done, today a wide variety of people can create their website without having to be a guru, though E-Commerce typically can require a more programming-oriented mindset. Here are some common web development packages:

FrontPage: A Microsoft program designed to get even the least Internet-savvy developer up and running in a short amount of time with little effort. Easy and relatively intuitive, this program does lack elegant handling some of the more advanced features that other programs, like DreamWeaver provides, such as friendly support of PHP, a competing technology with Microsoft’s ASP (more is discussed later on these).

Dream Weaver: Macromedia’s DreamWeaver is another package that allows you to build your website, it has much more power than FrontPage, but is much less intuitive to get started on site development.

Online WebBuilders: Many hosting companies provide built-in, browser-based software that provides the toolset necessary to build a website. This is the cheapest, maybe even free, way of implementing a website, but there are two drawbacks. You must have a good Internet connection to build your site, as these are usually very clunky on slower connections. Most importantly, though, the site you build may be

locked to that server and nearly impossible to port to a new host, should you be dissatisfied with their service. This is a highly-unrecommended solution, due to that large drawback. Standalone packages like DreamWeaver and FrontPage add a nice value of website portability.

Graphics Packages

There are a wide variety of static and dynamic graphics packages available for content creation.

Static Graphics Packages: To quickly list a few, a company can use Adobe Photoshop and Illustrator, or the CorelDraw Suite to create the website's icons, buttons, header images, background images, etc... Choice of the package you use for creating the look of your website can directly effect the sales portion of your E-Commerce presence.

Dynamic Graphics Packages: The trend in website design has been to add a more dynamic nature to company websites, with motion graphics, videos, animated buttons, etc... The most frequently used dynamic content creation software is Macromedia's Flash or Shockwave. Both are the same, but the value they bring to the table is in the sales experience for your customer. If you are selling a popular set of consumer items related to car audio, and you can add an exciting audio clip to the background of your site, while simultaneously adding sound and lighting effects to your buttons, moving product cameos across a define area of the screen, while describing your products in a multimedia fashion, your customer will probably feel more excited about purchasing the products, than they would, if you simply had a product shot and a "buy me" button.

Style Sheets: A website design approach that is efficient enough to mention in this section is a technology or feature called Style Sheets. Though many packages can set a "look" for your website, by repeating certain font sizes, colors, background settings, etc... in every HTML file on your website, Style Sheets can set all these parameters in one file. Then your HTML files can simply link back to this one master file for their

look, allowing you to completely change the overall scheme of your website by only changing one file.

Document Sharing

Once a company has developed the look for their very exciting, professional E-Commerce presence for selling their products and or services, before they can sell those items, they may need more than just a web page to describe a product. For example, though many electronic parts vendors will have a listing of their flash memory available, they may save the very detailed technical specifications, such as voltage levels, storage capacity, etc... for a spec sheet. The most common format for document sharing is Adobe's Acrobat file. It is universally supported on many computing operating systems, and often acts as a "printer" output on your platform of choice. So, if a company needed to provide this spec sheet, which was originally created in Microsoft Publisher, a software program not universally available, they could simply create the Acrobat version of the file, which could be downloaded by just about anyone.

Scripting Languages

Now that our company has created an exciting web presence for their customers to browse their products, and read more about their products, the company needs to provide a way to automatically sell that product or service. Note that if a company only has a small amount of products for sale, they may only need a static HTML page describing the product and a phone number that the customer can call to place an order. This discussion is for companies that have enough products and services that they need a more efficient manner by which a customer can browse and purchase those products and services. It is really up the company as to when they reach that decision point. When they do, languages more advanced than simple HTML code are needed to organize the effort. A Scripting Language is a set of commands that typically a browser or server reads, interprets, and then implements some sort of intelligent action. In contrast, where HTML language says to simply "draw this image here", a scripting language would say if this condition is true, "draw Image A here", otherwise "draw Image B there". Used properly, this decision

making process allows the intelligent sale of products and services in an efficient manner through a website interface as well as accessing databases, which can store the product information, customer information, etc... The company's next choice is to choose which languages (and thus programming architecture) they want to use to manage their sales.

Server Side Scripting: CGI, UNIX Scripts, and Perl Scripts, are all types of scripting languages. They were created in the earlier days of the Internet. They allow a customer to fill out some form on a website, press a button, and wait for the server to process that information and give them a response. They are fairly universally supported by browsers and servers and are somewhat simple to learn. The downside is they have to submit a form and wait for a server to respond by sending a whole new web page, which can take some time on a slow connection.

Client Side Scripting: JavaScript is the most common Client-Side scripting language, and its greatest feature, is that it does not require a form to be submitted back to a server in order to get results. So a customer may be calculating a mortgage with an online mortgage calculator, and they can get answers immediately, since the browser is actually interpreting the JavaScript. For this reason, JavaScript has found its way onto many websites as a convenient tool for text effects, calculators, scrolling banners, etc... though it is not really good at handling databases that reside on the server. Also, in the early days of the Internet, web pages were riddled with JavaScripts that would crash the browsers, so many people have support for it turned off in the browser.

In order to minimize confusion, it should be noted that there is a very powerful non-scripting language available for dynamically managing web content called JAVA. This language, developed by Sun Microsystems, is a "compiled" language that must be "interpreted" by your computer. Though it is nearly-universally supported, it is more a self-contained program rather than a scripting language for accessing databases and usually requires a JAVA interpreter to be downloaded, since browsers do not inherently support it.

Active Server Scripting: The need for a company to provide a fast, integrated customer experience, where the customer can get access to product information, search databases, and place orders without necessarily having to wait on a completely new page to load, caused the eventual creation of active server scripts. These are scripting languages that are run on the server before a page is downloaded to a customer's browser, and they can access database and other information in a section of the web page, such as a table, without the customer having to press a submit button or waiting on a whole new page to load. There are several, major, competing scripting languages for asp, of which PHP and ASP are the most popular. PHP is an open source language and ASP is Microsoft's proprietary language. These will be discussed in further detail below, specifically, in the Database Management section.

Database Management

While generating all the effort to set up an Internet commerce presence, through which customers can learn about and purchase the company's product and services, many companies (again with large enough product lines and/or services) also set up a database. A database is the company's online repository file(s) for all the product and service information they want to make available, which can include a grocery list of items such as model numbers, prices, features, availability, stock levels, shipping costs, colors, etc... As well, the company will probably have a need for remembering customer information, such as customer name, billing address, account passwords, shipping addresses, past purchasing preferences, credit card information, etc...

Though we won't fully explore the volumes of information that can be realized when studying databases, we'll have a short look at the core requirements necessary for a business to leverage the power of a database in its E-Commerce effort. There are two popular ways to manage databases: Database Management Systems and using scripting languages with a form of SQL (Structured Query Language).

Database Management Systems: “A suite of programs which typically manage large structured sets of persistent data, offering ad hoc query facilities to many users. A database management system (DBMS) can be an extremely complex set of software programs that controls the organization, storage and retrieval of data (fields, records and files) in a database. It also controls the security and integrity of the database. The DBMS accepts requests for data from the application program and instructs the operating system to transfer the appropriate data.”²⁰ DBMS are popular for companies managing large amounts of collected data for the company, which is sometimes called the company’s “data warehouse”. A fast, efficient DBMS can have a positive impact on a company’s daily business efforts. Examples of the most popular of DBMS are Oracle, Microsoft’s SQL Server, Microsoft’s Access, SyBase, MYSQL and PostgreSQL, to name a few. In addition to creating a database file to store the data, DBMS’s typically have a user interface through which companies can build, access, and manipulate that database.

Though a company may or may not create their online database with one of these DBMS’s, the interface through which most customers access the online portions of the database, is usually not the GUI (Graphical User Interface) that comes with a DBMS package. Instead the customer interface is typically a custom-made web page empowered with a scripting language, like those mentioned above (mainly ASP and PHP), that can access the database through SQL. Let’s first define SQL and then see how scripting languages are involved.

SQL: “[Structured Query Language] is an ANSI (American National Standards Institute) standard computer language for accessing and manipulating database systems. SQL statements are used to retrieve and update data in a database. SQL works with database programs like [the ones mentioned above]. There are many different versions of the SQL language, but to be in compliance with the ANSI standard, they must support the same major keywords in a similar manner (such as SELECT, UPDATE,

DELETE, INSERT, WHERE, and others). Most of the SQL database programs also have their own proprietary extensions in addition to the SQL standard”¹⁶

Scripting Languages and SQL: Scripting languages that support database management do so by supporting SQL. PHP and ASP are currently the most popular scripting languages used on in conjunction with SQL to access company databases while leveraging their powerful, built in decision-making capabilities to manage the customer transaction in a (hopefully) friendly, efficient manner.

An extensive list of the technologies discussed above and more, along with hyperlinks to resources is listed in Appendix A.

Transaction Management

The technologies above, in addition to some proprietary technologies are capable of handling electronic transactions. If a company accepts credit cards in their online store, they have a relationship either directly through their bank or through a credit card processing entity to manage the transaction, and sometimes essentially floating those purchases to the credit card company and getting their reimbursement almost immediately. For small businesses, PayPal.com has been the biggest facilitator of credit card support for online purchases, as businesses can open an account for free. In exchange for allowing a customer to pay online with a credit card, the business surrenders a small percentage of the transaction fee as payment to PayPal. Recently having been purchased by eBay, PayPal has also become a tremendously large venue for credit card acceptance in that global transaction marketplace.

Support Management

FAQ's , Knowledge Bases, Customer Forums, Live Chats, Support Ticket Systems and more technologies have evolved with the growth of the Internet to improve the customer support experience, while attempting to minimize the impact of hourly wages spent by support representatives helping customers. The more empowerment a business can give its customer to

help himself, the less money the company will spend on that customer after the sale is complete.

FAQ: Frequently Asked Questions – This is an ideally-comprehensive list of support questions the company most often runs into. It also contains anticipated questions. The problem is that these are typically static pages, not searchable, so they become unwieldy for large corporations and unfriendly to customers.

Knowledge Base: A searchable database of FAQ's. This is the next generation FAQ, that a customer can search for his problem. Customers are often routed to these KB's before getting through to technical support for more advanced questions.

Customer Forums: Let other customers and sometime support representatives answer customer questions. Ingenious idea, but often slow responses make for an unimpressive customer experience.

Support Ticket Systems: Database support issue tracking system that “opens, escalates, and closes” support problems, often allowing support representatives to write comments and status on the item. Support tickets are often accessible to customers on the corporate website, so they can track the status without calling the representative. A fantastic way to keep support issues from falling through the cracks, if used consistently.

Advertising – Driving Traffic to your Site

The traditional means of advertising (radio, TV, newspapers, Telemarketers, FAX Machines, etc) must not be forgotten when attempting to drive visitors to your website. Many startups simply think that because they have a website, the masses will come. This is terribly untrue. Advertising a website is just as important as advertising a phone number. In addition, many portals now have “Ad Words” attached to their search engines. When a site visitor searches for a keyword on the search engine, that keyword triggers a list of advertisements, usually on the

side of the page, tailored to match that keyword. Advertisers pay a “click-through” price for each visitor following that linked advertisement back to their site.

SPAM: electronic junk mail, is a form of mass advertising almost anyone with an email account is familiar with, but it does drive large numbers of visitors to a company’s website, if done properly. Companies can outsource this service for a nominal upfront fee or buy a list of email address that may or may not be stale.

Affiliates: are other companies willing to put up an advertisement on their website that is a link to your website. They can get a click-through fee for this, or it may be free, depending on your relationship.

Tailoring The Customer Experience

Even more importantly than leveraging the Internet to a company’s advantage, it is becoming increasingly difficult to compete successfully without using the Internet as one venue for commerce. Many customers simply expect to not only visit a company’s website, but they expect to see a stream-lined, easy-to-use, extensive interface that is as close to the face-to-face customer experience they can get by going into a physical location. If the site is poorly implemented, customers now see this as a lack of professionalism. Often times this is done by using “sessions” or “cookies”, terms used to describe the files saved on a visitor’s computer when they visit a website. The cookies allow a webserver to “remember” the visitor, by accessing account information, like login names and passwords, in those files. When a website member checkmarks the box that says “keep me logged in on this website”, they are essentially saving a Boolean value on in a local cookie file to remember this status. Cookies are used to customize the experience of the website for the users.

5. Management and Business Points of View on Technology

The powerful benefits of E-Commerce have been readily accepted by some firms, while wholly rejected by others. Fraud will take more than \$2.6 billion out of eCommerce in 2004-- a 37% increase over the 2003 estimate¹². All who have entered this arena have recognized it is a dynamic changing landscape and the most successful companies grow and change with the ebb and flow of the technology. There are a lot of methods for attracting customers to visit company websites. We see websites printed on business cards, listed in TV & newspaper advertisements and even posted on bill boards as we drive down the street. Search engines such as Yahoo and Google are also actively used to bring customers to a business website. The development of META tags to enhance search engine listing is a new science with a market full of companies developed and designed to directly exploit this to increase business sales.

“Meta tags have never been a guaranteed way to gain a top ranking on crawler-based search engines. Today, the most valuable feature they offer the web site owner is the ability to control to some degree how their web pages are described by some search engines.¹³”

However, we will now focus on how to put these new technologies together to create the website itself. The power of the website is far reaching. Businesses can use it to simply empower customers to investigate a product or service before purchases. Many clients will use the business site to check on past products and company references. The website allows customers to find specifics details about businesses leaders and operations history. Often businesses provide links to related sites and articles to help customers in selecting a product or service. One method used a lot is to give customers a “free teaser” to get them hooked into buying a product.¹⁴

¹² “eCommerce Fraud Losses to Jump \$700 Million in 2004” by Bruce Frymire
http://www.cybersource.com/news_and_events/view.xml?page_id=1313

¹³ “How To Use HTML Meta Tags” By Danny Sullivan,
<http://searchenginewatch.com/webmasters/article.php/2167931>

¹⁴ “How To Use Your Ezine To Drive Web Traffic - 4 Tips” By Christopher Knight,
<http://emailuniverse.com/ezine-tips/?How-To-Use-Your-Ezine-To-Drive-Web-Traffic---4-Tips&id=1271>

What's the website for?

The website benefits have been witnessed for years and many companies are based simply on teaching and directing companies to exploit them:¹⁵

1. Improve your business image with an Online Presence
2. No need to hand out fliers or ads, just give your customers your web site address
3. No matter the size of your business, your web site is the most powerful and most cost-effective direct marketing and communication tool with your customers
4. Just update your web site to quickly and easily inform your customers of new products, services, deals, or specials
5. Use online sales packages, to sell anything online, customers can order your products over your web site from the comfort of their own home or office
6. With a web site, you can easily attract new customers not only locally, but nationally and internationally
7. Combine this with Search Engine Placement; to easily attract new customers that are looking for your products or services

Some companies provide a website only to direct customers to a store location. They feel products or services are only valuable and purchased after personal experience and direct contact. Such companies haven't yet explored the endless opportunities online. Today even the smallest private firms can appear as large established corporations with a well designed website.

¹⁵ Jatech Solutions Inc. http://www.jatech.ca/website_benefits.shtml

6. Making it Yourself vs. Buying Pre-made Packages

The power and options for development of a website for sales of products and services are as variable as the products and services themselves. There are full featured webs where business can interactively develop a store live online¹⁶. There are also independent programs¹⁷ that can be purchased to run on a private server for developing an E-Commerce site completely separate from all other established providers. Each has specific benefits and costs. However, corporate priorities and goals must be clearly defined before beginning the design process.

WBAWI? -- What business are we in?

To select the best option for your business it is most important to define your business, WBAWI as noted earlier. With this clear understanding the CIO can select from the various options what application is best for their business. Flexibility is important, but starting with a clear goal in mind can save future expenses and assures the best profitability. For example define what you know you need:

1. Fast and Reliable, slick and professional web presence.
2. Secure and flexible.
3. Ability to upload existing web site.
4. User friendly, easy to use GUI.
5. Easy to access, knowledgeable, friendly support.
6. A shopping cart that can integrate seamlessly with root sites that can handle purchases and possibly accounting for the services as well. All shopping cart features should blend in with the rest of the site.
7. A merchant account with low discount rates, transaction fees, ect... They all seem to sneak in various fees and monthly charges with little consistency so be clear what you're really getting into and get it in writing.
8. Some solid Standard Operating Environment (SOE) tools to make sure you are getting the best search engine exposure without paying a bunch of money for it.

¹⁶ Intense Development; Custom website design <http://www.intensedevlopment.net/Business-website-design-Intense.html>

¹⁷ ShopFactory; the key to your e-commerce site <http://www.shopfactory.com/>

- a. SOE tools are keyword density analyzer, link popularity check, to track of your backlinks, link popularity, search engine saturation and rankings:
<http://www.digitalpoint.com/tools/> <http://www.marketleap.com/publinkpop/> <http://www.axandra.com/free-link-popularity-check.htm> <http://www.websiteoptimization.com/services/analyze/>
9. A host or software package that will submit the most important URL's to the most possible search engines quickly and easily.
10. A good opt-in mail list manager for newsletters.
11. A good forum tool.
12. Ability to sell digital downloads like e-books and audiobooks.
13. See appendices for extensive lists.

In-house and packaged systems can be completely different so your selection must be carefully planned (see Comparison chart in Appendix B). But remember the digital world is still changing at five times normal speed. Fundamental to this is “What is the website for” so along these lines here are five steps to digital survival:¹⁸

1. Vision in senior leadership
2. Very fast decisions
3. Decentralized structures
4. Radical thinking
5. Scenario planning

Three big E-Business mistakes - but the greatest one is yet to come....¹⁹

1996: "the net is irrelevant"

1999: "we're late - spend all we can"

2001-3: "we always said the net was fundamentally over-hyped"

Training courses vs. teaching yourself

Training seminars and software have exploded into a whole new E-Business²⁰ as well. There are countless providers of information online²¹. Lots of it is free and available to view online,

¹⁸ “E-commerce / E-business” By Dr Patrick Dixon <http://www.globalchange.com/ebusiness.htm>

¹⁹ *ibid.*

download or purchase. Complete websites have been developed to teach specific products, enhance user services and develop new technologies. Then the software providers also have knowledge bases full of solutions to specific problems.²²

As noted earlier the products and solutions will come from WBAWI. With clear focus and understanding the CIO exploit the flexibility and availability to assure the best profitability. For more detailed examples please review Appendix C for a detailed listing of E-Commerce data providers.

²⁰ Microsoft E-Business Resources: <http://www.microsoft.com/learning/centers/ebusiness.asp>

²¹ Handzon Tutorial; Handzon Technologies L.L.C. Website Builder <http://www.handzon.com/Tutorial/>

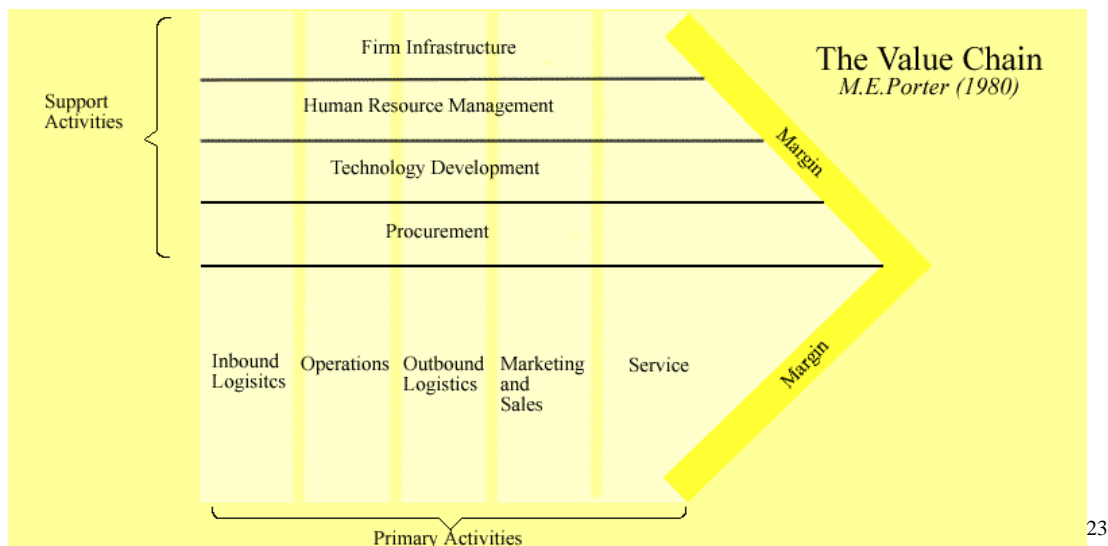
²² How to publish a Web to a CD-R in FrontPage 2002 <http://support.microsoft.com/kb/310511>

7. How To Implement E-Commerce: Action Items

After the thorough discussion above, we have compiled a list of action items that a CIO should follow in order to implement an E-Commerce business model with a high probability to succeed.

Strategic MIS: Action Items for a CIO

1. What Business Are We In?
 - a. Supply components
 - b. Design product or service
 - c. Distributor end sales
2. Define value chain
 - a. Business model
 - b. Applications
 - c. Back-end
 - d. Overall system
3. Create Profit
 - a. Economy of scale
 - b. Leverage Infrastructure



²³ Value Chain Analysis, Marketing Teacher is for marketing learners.
http://www.marketingteacher.com/Lessons/lesson_value_chain.htm

The Value Chain

Fundamental to these decisions is the details of the MIS system infrastructure for the final E-Commerce solution.

1. Business model
 - a. Packaged store/set-up costs
 - b. Hosting
 - c. Payment fees per transaction
 - d. Order processing
 - e. Accounting
 - f. Fulfillment/ delivery
2. Applications
 - a. Purchase software
 - b. Register URL
 - c. Provide data security/ backup services
 - d. Customer order form
 - e. Verification
 - f. Check out
3. Back-end
 - a. Secure order & encryption
 - b. Shopping Cart with inventory
 - c. Workflows processing
 - d. Accounts and passwords
 - e. Disaster recovery
4. Overall system
 - a. Network Secure
 - b. Software backups
 - c. Workflows backups
 - d. Virus protection
 - e. Policies and procedures

8. Review and Recommendations

In conclusion we found that the Internet provides a vast resource for the development of E-Commerce. There are a great multitude of available technologies and resource. However there are also significant pitfalls and risks involved. If the CIO selected a specific package there are significant limitations defined by the package. Conversely when the CIO selects to build an E-Commerce site individually the vast benefits and upgrades provided by other technology developers are not as easy to include and implement.

Fundamentally when selecting an E-Commerce solution the CIO must do a lot of homework, beginning with: WBAWI: “What Business Are We In.”

9. Bibliography

1. "E-Commerce" www.Dictionary.com, <http://dictionary.reference.com/search?q=e-commerce>
2. "Successful E-Commerce Business Models: The Business Is Still More Important Than the Web Site" By Nicholas Carroll,, <http://www.hastingsresearch.com/services/business-models.shtml>
3. "What Business Are We In?" By Earl C. Johnson. <http://www.joe.org/joe/1995october/comm2.html>
4. "Internet Business Models and Strategies: Text and Cases" McGraw-Hill: Columbus Ohio. Dr. Allan Afuah, Dr. Chris Tucci
5. "E-Business Models", By W. Tim G. Richardson, Toronto, Canada <http://www.witiger.com/E-Commerce/business~models.htm>
6. "Time for Retailers to Face Their Web 'Terror'", Business Week: Ellen Newbourne <http://www.businessweek.com/ebiz/9907/ep0705.htm>
7. "The New Virtual Business;" By Marty Nemzow; Computer Publishing Group. <http://webserver.cpg.com/wb/3.8/>
8. www.uspto.gov PN/5,960,411 <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=5,960,411.WKU.&OS=PN/5,960,411&RS=PN/5,960,411>
9. www.uspto.gov PN/6,029,141 <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/search-adv.htm&r=1&p=1&f=G&l=50&d=ptxt&S1=6,029,141.WKU.&OS=PN/5,960,411&RS=PN/6,029,141>
10. "Patents on Internet Business Models" By Nicholas Schmidt. Cybersavvy UK. <http://www.webpr.co.uk/news/patents.asp>
11. www.uspto.gov AN/"Amazon.com, Inc" <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=%2Fmetahtml%2Fsearch-adv.htm&r=0&p=1&f=S&l=50&Query=an%2F%22Amazon.com%2C+Inc%22&d=ptxt>
12. "eCommerce Fraud Losses to Jump \$700 Million in 2004" by Bruce Frymire http://www.cybersource.com/news_and_events/view.xml?page_id=1313
13. "How To Use HTML Meta Tags" By Danny Sullivan, <http://searchenginewatch.com/webmasters/article.php/2167931>
14. "How To Use Your Ezine To Drive Web Traffic - 4 Tips" By Christopher Knight, <http://emailuniverse.com/ezine-tips/?How-To-Use-Your-Ezine-To-Drive-Web-Traffic---4-Tips&id=1271>
15. Jatech Solutions Inc. http://www.jatech.ca/website_benefits.shtml
16. Intense Development; Custom website design <http://www.intensedevlopment.net/Business-website-design-Intense.html>
17. ShopFactory; the key to your e-commerce site <http://www.shopfactory.com/>
18. "E-commerce / E-business" By Dr Patrick Dixon <http://www.globalchange.com/ebusiness.htm>
19. ibid.
20. Microsoft E-Business Resources: <http://www.microsoft.com/learning/centers/ebusiness.asp>
21. Handzon Tutorial; Handzon Technologies L.L.C. Website Builder <http://www.handzon.com/Tutorial/>
22. How to publish a Web to a CD-R in FrontPage 2002 <http://support.microsoft.com/kb/310511>
23. Value Chain Analysis, Marketing Teacher is for marketing learners. http://www.marketingteacher.com/Lessons/lesson_value_chain.htm

Appendix A: Value-Adding E-Commerce Technologies

Technology	Value - How does it help us?	Example Sites	Other Comments
Website Management			
Hosting Technologies			
Linux	What platform do you choose? UNIX style server	www.linux.com	More familiar with UNIX? Use this one.
Microsoft Server	Microsoft's version of a server.	http://www.microsoft.com/sql/default.asp	More familiar with Windows? Use this one.
Shared Virtual Servers	Many companies hosted on one server	http://www.verio.com/	Starting out with small resources? Use this one, as it is cheaper
Dedicated Servers	one server handles all traffic for one company	http://www.verio.com/	Once you get savvy enough, you might save money by operating your own.
Owning vs Renting	You can set up your own server with a dedicated IP connection, or rent it from a host	http://www.verio.com/	Same as above
Website Development Packages			
Microsoft Frontpage	Designing your overall website Simple layout program to create and publish your website	http://office.microsoft.com/en-us/FX010858021033.aspx	Somewhat constrained, but easier to understand and use for website creation
Macromedia Dreamweaver	Same purpose as Frontpage, but more powerful and flexible	http://www.macromedia.com/	Very powerful, but difficult for first time users
GUI Builder on server	Website layout program implemented in a scripting language on a host server.		Cumbersome and locks you to that host. Never do this.
Hand-written	Programmer used a text editor or programming environment to create pages. No drag and drop GUI.		Experts do this, but lessening due to increasing abilities of GUI's
Graphics Packages/Design			
Flash	The aesthetic appeal your site can have Dynamic content with scripting	http://www.macromedia.com/	very popular with customers, quick install
Shockwave (Director)	Dynamic content with scripting	http://www.macromedia.com/	slow to download, slow install
Adobe Photoshop, Illustrator, CorelDraw	Very attractive, unhindered layouts	http://www.adobe.com/products/photoshop/main.html	managed more by graphics people
Frontpage/Dreamweaver Style Sheets	Layouts built into the the package	http://www.macromedia.com/ http://www.w3.org/Style/CSS/	

Appendix A: Value-Adding E-Commerce Technologies

Technology	Value - How does it help us?	Example Sites	Other Comments
Document Sharing	Information you sell/give to your customer about your products		
Adobe Acrobat	Universal format - Macs, PC's, Suns, etc... can read	http://www.adobe.com	usually can be secure to most readers
Scripting Languages	The intelligence behind your site		
CGI, UNIX Scripts, Perl Scripts	Server Side Scripting - Allows form management for submission and handling of customer data	http://www.perl.com/	Cumbersome to customer, since it is a two-step process. Not as dynamic as PHP or ASP
Javascript	Client-Side Scripting - allows local manipulation of data, so customer doesn't have to reload the page to get some results.	http://www.javascript.com/	Very easy to program, very popular, but usually done poorly. Many customers turn this feature off due to early web browser nightmares
PHP	Server Side Scripting - Allows form management for submission and handling of customer data	www.amazon.com	Secure - customers cannot read your web page's source code to see "how you did that". Very popular current trend.
ASP	Server Side Scripting - Allows form management for submission and handling of customer data	http://www.asp.net	Secure - customers cannot read your web page's source code to see "how you did that". Very popular current trend.
Java (programming language) and java applets	"Compilable" program executable that executes dynamic functionality.	http://www.java.com/en/	Long downloads and customer must install interpreter
<u>Database Management</u>	Managing the REAL information behind your E-Commerce site		Required if you plan to have any customer-related information management that will need to be remembered between visits
MySQL, Postgre SQL, Microsoft Access, Microsoft's SQL Server, Oracle's various suites	Database Management Systems	www.oracle.com	Access and ASP are popular combinations on LINUX servers, just like MySQL and PHP are popular combinations on Microsoft servers
<u>SQL</u> via ASP, PHP, Perl, Visual Basic	Scripting languages that manage a database via SQL Language	http://www.w3schools.com/sql/sql_intro.asp	

Appendix A: Value-Adding E-Commerce Technologies

Technology	Value - How does it help us?	Example Sites	Other Comments
RSS Feeds	Automated daily updated info from remote online sources	http://www.feedster.com/	Though not directly a database management interface, this mechanism for transmitting or receiving daily news updates from other sources is an efficient way of information (and thus value)
<u>Transaction Management</u>			
Credit Card - Direct	How you get payments from the customer Company manages credit card transactions		Good for large businesses
Paypal - Indirect Credit Card Mgmt	Company outsources credit card transactions in exchange for a larger fee than direct	www.paypal.com	Good for small businesses
<u>Support Management</u>			
FAQ	Static listing of support questions that frequently come up		unfriendly
Knowledge Base	Searchable database that answers customer questions without tying up technical support phone lines	http://www.knowledgebase.net/	frustrating if done poorly
Forums	Customers and support representatives can answer other customers' questions	http://www.big-boards.com/kw/engine/f/	good as an archive customers can search
Live Chat	Support reps or sales reps can answer questions right on the spot	http://www.sightmax.com/?campaign=LiveChat http://www.boldchatplus.com/ http://www.liveperson.com/	Allows support reps to handle more than one customer at once. Examples: Yahoo chat.
Support Ticket System	Electronic tracking system for support representative to "open, solve, and close" a customer issue.	http://www.liveperson.com/sb/sb_contact_center.asp?source=google&kw=Support+Ticket http://www.h2desk.com/?fr=ggl http://www.phpsupporttickets.com/	Customer support reps don't duplicate responses or drop customers. In addition to tracking product issues, it allows customer data tracking as well.

Appendix A: Value-Adding E-Commerce Technologies

Technology	Value - How does it help us?	Example Sites	Other Comments
<u>Web Advertising</u>			
Traditional - TV, Radio, Newspapers	Driving traffic to your website via traditional means	http://www.lastsecondmedia.com/	This link is one of many available
Google Ad words	Driving traffic to your website via keyword-driven advertising	www.google.com	
Search Engine Submissions	Submitting your website to various search engines and portals that have large volumes of visitors	http://searchenginewatch.com/webmasters/	
SPAM	broadcasting typically unwanted advertising to large volumes of recipients. Though this is looked up on negatively, it can generate large volumes of traffic for your website	http://search.constantcontact.com/home.jsp?utm_id=910805&cc=goo910805	A service for companies who want to send email updates to customers who have "opted-in" to receive the updates.

Appendix B: E-commerce solution providers

Website	Value - How does it help us?	Other Comments
http://www.verisign.com/products-services/payment-processing/ecommerce-startup-kit/index.html	provides different levels of service for different client packages. Site includes guides and instructions to enhance overall e-commerce site success.	E-Commerce Start-up Kit includes everything you should know about setting up an e-commerce site including how to secure and authenticate it, easily accept payments online and protect your customers and business from the threat of fraud.
http://www.oscommerce.com/	osCommerce is an online shop e-commerce solution under on going development by the open source community. Its feature packed out-of-the-box installation allows store owners to setup, run, and maintain their online stores with minimum effort and with absolutely no costs or license fees involved.	osCommerce is a complete online store solution that contains both a catalog frontend and an administration tool backend, which can be easily installed and configured over a web-based installation procedure. Site includes deomonstartions, live sites and detailed instructions
http://www.intensedevlopment.net/	Dedicated Tampa website design team is seeking to move your company to the next level in marketing by providing your business with the tools needed to succeed online, and will actively seek for continuous improvement to your Internet business. Our Tampa website design team does not only want to meet your expectations, we want to exceed them to the point where you will come to expect more from your Internet marketing investment.	good advice and lots of tricks and tips to read. Intense Development is a full-service website design & development company. This means that we not only do the design and programming of the web site, our Tampa web consultant also specializes the Search Engine promotion, copywriting, web hosting and web site maintenance.
http://www.mals-e.com/	The standard account is free and designed to be the correct solution for the vast majority of merchants. It offers a full featured shopping cart with access to all the important features that are required to start selling goods and services on the internet. In general the paid version, the Premium account, doesn't buy you more features, rather it offers easier Admin.	Several users have gone the extra distance and written up a large collection of tutorials to help out others in using Mals-e services
http://www.shopfactory.com/	ShopFactory is a complete solution. Every aspect from shop creation to website hosting and the management of orders is taken care of. If you can use a computer with Microsoft Windows, then you can with point and click ease create your own shop, select which payment methods you want to accept, set your shipping costs and publish your Internet shop. Even if you know nothing about e-commerce or how and where to publish your website.	More than 150,000 shops have been created with our secure shopping cart software all around the world, since we started in 1995 to create the world's first do-it-yourself shop building software. Now an incredible 100 million people visit e-commerce sites powered by ShopFactory every month.

Appendix B: E-commerce solution providers

Website	Value - How does it help us?	Other Comments
http://www.ecx.com/e-commerce_exchange_visa_stuff	Makes it easy, affordable, and secure for businesses to accept credit cards and checks on the Internet. E-Commerce Exchange offers a full range of products to fit your needs Bank-approved merchant accounts, Secure server connectivity, Real-time, online payment transactions, Shopping carts, Terminals & printers, Ground-breaking 95% approval rate, Fast 7-10 day setup	They've been in the payment processing industry for 11 years, and they're a nationwide company who can easily handle thousands of customers each month. Their hands-on approach with clients and state-of-the-art technology produces high sales and happy merchants. After seeing these benefits, our decision was simple
http://smallbusiness.yahoo.com/merchant/c1.php	Merchant Starter delivers the basic tools and support you need to build, manage, and market your first online store. Don't worry if you're new to e-commerce; this product is designed to help you every step of the way.	All Yahoo! Merchant Solutions' plans come with plenty of storage and bandwidth to create media-rich and interactive web sites. They include 10 GB of storage and 200 GB/month of data transfer. You can choose to increase your available storage at any time. You also receive snapshot backup and restore capabilities, SSL security and a wide range of web design tools to choose from. See the Site Design section below for details
http://www.ordermotion.com/	Combines the latest web- and database technologies with 20 years of direct marketing expertise and proven best-of-breed marketing techniques. It is equipped with an open XML interface that allows for bi-directional communication with 3rd party systems such as e-commerce front ends, carrier shipping software or call center software. As a purely web-based application, the user interface is highly intuitive and allows for rapid deployment and fast training for your call center, warehouse, inventory management, and marketing staff. No Hardware to Purchase, No Software to Install, No Bugs to Fix. OrderMotion runs on any platform with Internet Explorer 5.5 or higher. There are no other software or hardware requirements.	A web-based application benefiting from revolutionary innovations in technology, OrderMotion offers your business the "holy grail" - the power of a multi-million dollar system that integrates the real-time management of all selling channels, all operational functions, and marketing analytics - without up-front and ongoing investments in software, hardware and systems integration.

Appendix B: E-commerce solution providers

Website	Value - How does it help us?	Other Comments
http://www.hileytech.com/	Support Top and Sub-Categories Setup Categories and add products via Admin Panel Can setup multiple options for each and every categories to cater of various colour, sizes, type and more. Run on Microsoft Access Database Complete with integration with WorldPay Payment Server, Paydirect, Paypal, 2CheckOut.com and others to accept VISA, Mastercard, Amex and others. Order Tracking and Records Auto generation of email notifications to Merchant and Purchaser for successful transactions	What do your get by paying RM 2,500.00 1 Year of Free Web Hosting, W2K Basic Server E-Shopping Cart installed on your web space Support Unlimited Categories, Unlimited Products, Unlimited Products Pages. All web pages can be easily edited by Frontpage or Dreamweavers
http://www.istores.com/	allows you to build your own sleek, professional looking web site in less than 20 minutes with any web browser. You don't need any knowledge of computer programming or web site design. All you do is point and click.	Complete Solution E-Commerce Online Site Editor Professional Themes Traffic Reports Search Engine Registration
http://www.netstores.com/	The NetStores Scalable E-Commerce Architecture fits the changing needs of your growing e-business--now and into the future. We offer both package and custom solutions, designed to take your e-business to the next level.	Simplifies your ordering process by allowing your customers to shop at their convenience and pay for purchases directly on-line. Gives your customers the power to purchase directly on your web site from anywhere in the world. Will easily integrate with your existing Web site and database of products and is compatible with most hardware and software. Allows you to create a storefront using almost any text based database file. Makes distribution of intellectual property such as software, images or written material fast and easy with a simple click of a button.
http://www.storefront.net/solutions/new/	We do virtually everything you need to launch your e-business for less than the cost of a single metro newspaper ad. Launch your online business and start generating new revenue quickly and easily. Now it's even easier for busy merchants who know that opening an e-business can grow sales and increase profits, but don't have the time or expertise to design and build a web site. Let our team of e-business experts get your web store ready to launch in as soon as 6 weeks.	The Advanced Edition adds the following features for merchants with sophisticated online needs. Integrated Download Delivery Inventory Tracking Volume Pricing Customer Specific Pricing Automated Drop-Shipping Wish List

Appendix C: E-commerce resources:

Website	Value - How does it help us?	Other Comments
http://www.miatrade.com/E-Commerce/	Miatrade.com is a Free Webmaster Resources Directory. We have hundreds of Webmaster Resources under many categories that you may feel free to browse such as Animated GIFs, Broadcasting, Chats and Forums, Clip Art, Domain Names, E-Commerce, Fonts, Hosted Components and Services, Hosting, Image Editing, Internet Marketing, Promotion, Site Management, Style Sheets, Templates, Webmaster Tools and many others. frontpage	E-Commerce: Associations - 29 E-Commerce: By Region - 1 E-Commerce: Conferences - 32 E-Commerce: Consultants - 126 E-Commerce: Customer Relationship Management - 22 E-Commerce: Developers - 355 E-Commerce: Education and Training - 191 E-Commerce: Employment - 15 E-Commerce: Marketplaces - 183 E-Commerce: News and Media - 92 E-Commerce: Standards and Protocols - 35 E-Commerce: Strategy - 21 E-Commerce: Technology Vendors - 29
http://www.ftc.gov/bcp/menu-internet.htm	Now you can get consumer information from the FTC two ways: Click on TEXT or PDF for written information or click on TEXT, RAM or MP3 for an audio file that features one minute of related information from Shirley Rooker, director of WTOP's Call for Action.	Going Shopping? Go Global! A Guide for E-Consumers [TEXT] [PDF] Guide to the Federal Trade Commission [TEXT] [PDF]
http://elab.vanderbilt.edu/	Vanderbilt University's eLab, founded in 1994 by Professors Donna L. Hoffman and Thomas P. Novak, is the nation's first academic research center dedicated to the study of the Internet. The New York Times calls eLab "one of the premiere research centers in the world for the study of electronic commerce" and the Wall Street Journal recognizes the effort as the "electronic commerce pioneer among business schools." eLab practices what it preaches. Since its founding, the center has applied the results of its e-commerce research to help over two dozen corporate sponsors integrate the Internet into their business strategies.	eLab consists of virtual experiments and online marketing surveys, live destination web sites, an e-commerce research library and an online consumer panel that provides an extensive subject pool for Web-based e-commerce surveys and marketing experiments fielded in the virtual lab. eLab supports electronic commerce and online marketing research activities of a number of multidisciplinary faculty and two post-doctoral fellows at the Owen School at Vanderbilt University. A dedicated technical research support staff provides programming, graphic design, and database support for these activities.
http://europa.eu.int/ISPO/ecommerce/	The electronic commerce team is a knowledge based team of experts, who are keen to ensure that the European Union remains at the forefront of electronic commerce. Our mission is to keep Europe at the forefront of the global digital economy via facilitating innovation, creating value in the electronic marketplace and co-operation with leading edge organisations.	Constantly updated information from within and without the European Commission. Interactive communication points, such as our discussion lists, our generic email address, feedback and Dr. Ecommerce, where you can communicate with us and others on every aspect of electronic commerce Innovation support sources where you can get all kinds of help to make your innovative ideas happen.

Appendix C: E-commerce resources:

Website	Value - How does it help us?	Other Comments
http://ecommerce.ncsu.edu/	The E-Commerce Learning Center @ NC State University is a portal to web-based educational materials and scholarly research related to electronic commerce. Since its beginning, the site was made available to the public to promote the study and practice of e-commerce. Today the site is host to a variety of e-commerce related courses and research projects by the faculty at NC State University.	Recent Research Available: A Perceptual Visualization Architecture Auction Research Program Best Practices for e-Business Projects Bricks to Clicks: What Drives Consumer Use of the Internet in a Multichannel Retail Environment Changing What We Know About IT Implementation Practices
http://www.ecommercecommission.org/	The Advisory Commission on Electronic Commerce was created by Congress and tasked with producing what is arguably the most important policy initiative of the information age: recommendations on electronic commerce and tax policy, critical issues with global implications.	The Commission completed its work with its Report to Congress, which was delivered on April 12, 2000, ahead of schedule. The Commission's offices are closed. Although this site will not be updated, it will remain available to the public courtesy of The Tech Center, part of the George Mason University School of Law.
http://www.ilr.cornell.edu/library/subjectGuides/ecommerce.html	Web guide may be viewed as a beginner's introduction to the topic, providing links to various aspects of e-commerce including international commerce, technical information, legal resources, online journals and newspapers, industry and association guides, and government policies.	Contents:Introduction General Sites Industry Associations and Organizations International Legal Resources Online News and Journal Sources U.S. Government Sites
http://merc.mcmaster.ca/	MeRC's aim is to focus and provide infrastructure support for research in e-business to academics and industry partners	On our Web site you will find our research papers, latest news on e-business activities at McMaster University and information about our e-business related programmes.
http://www.ecommerce.ac.uk/	The eCommerce Innovation Centre (eCIC) at Cardiff University has built a reputation over 15 years as a leading authority on the successful implementation and exploitation of eCommerce. eCIC is renowned for its work with the business community and national and regional governments.	Innovation Centre seeks to: Help the business community become more aware of and adopt modern electronic trading practices; Support and encourage all sectors in their use of eCommerce, as well as new and existing users of EDI; Investigate the benefits and impact of eCommerce through various regional, national and international projects; Raise the awareness of the next generation of professionals leaving university by encouraging students to research, understand and use eCommerce.

Appendix C: E-commerce resources:

Website	Value - How does it help us?	Other Comments
http://e-studies.monash.edu.au/e-biz/new/	Monash University e-commerce Information Service.	Links to a wide range of resources and advice on electronic commerce. Information for small businesses using or planning to use e-commerce as part of their business development strategy. Links to government departments providing advice on electronic business for organisations and consumers. Information about Monash University courses and services related to e-business.
e-commerce e-zines: http://www.wilsonweb.com/	Web's largest source of key information about doing business on the Net -- hundreds of articles, thousands of links to resources on e-commerce and Web marketing.	Publishing- Publishing a free weekly newsletter, Web Marketing Today Free Edition. Publishing a paid monthly newsletter, Web Marketing Today Premium. Publishing in-depth e-books on Internet marketing. Online Information- Maintaining an extensive annotated database of links to important articles and resources in the field of Internet marketing and e-commerce, totaling over 10,000 links. Providing hundreds of articles on Internet marketing on our website in past issues of Web Marketing Today, Web Marketing Today Premium, and Doctor Ebiz. Speaking-Training hundreds for individuals through the Internet Marketing Best Practices Briefing and other seminars we produce. Speaking for corporations and at conferences worldwide. Consulting-Providing moderately-priced one-hour telephone consulting for a few individuals On-site consulting corporations and larger organizations.
http://www.bakernet.com/ecommerce/	E-Transactions Law (Including Electronic Signatures) Privacy/Data Protection Information Security Law (Including Cybersecurity, PKI, Cybercrime) Tax -- U.S. and International Global E-Law Alert Newsletter (Free weekly e-mail newsletter) Other E-Commerce Law Resources Intellectual Property E-Financial Services	E-COMMERCE LAW RESOURCES- Key Facts & Figures Chairman of the Firm: John Conroy Date Firm Established: 1949 Number of Locations: 69 in 38 countries Fee Income (FY04): US \$1.228 Billion Number of Partners: 620 Number of Qualified Attorneys 3,225

Appendix C: E-commerce resources:

Website	Value - How does it help us?	Other Comments
http://www.ecominfocenter.com/	<p>We try to provide you with a simple, understandable and efficient navigation scheme. We hope that this will help you to find easily and quickly the information you are looking for. We are aware that refining this project is an ongoing task. So, please feel free to give us your feedback to better serve you. We hope that you will enjoy surfing through eComInfoCenter and hope that you will come back soon for the frequently updated eCommerce info.</p>	<p>Basically, this site is centered around these 11 main sections:</p> <ol style="list-style-type: none">1. eCommerce Help (Terminology, Tutorials, FAQ's)2. eCommerce Info sources (News, Forums, Web Sites, Books, Events, Search/EC Directories)3. eCommerce Services tailored to the needs of (e-shoppers, e-merchants and EC professionals)4. eCommerce Products (Software, Hardware)5. eCommerce Technologies (Future trends, Tech references)6. eCommerce: Small Biz (Resources, our services)7. eCommerce: B2B (Worth reading, Solutions, Auctions, Web marketing, Portals, ERP)8. eCommerce: Government (Resources, Publications, Services, laws)9. eCommerce: Global (Resources, Travel, Services, Trade, Country information)10. eCommerce: Non profit (Publications, Resources, Web fundraising, Services, Software)11. Interact with us! (Join our forum, join our mailing list, sign our guestbook, advertise with us, ...)
http://www.emarketer.com/	<p>eMarketer aggregates the latest research data and analysis from over 1,700 sources so you can make better, more informed business decisions. For an in-depth look at eMarketer methodology, download The eMarketer Difference (pdf).</p>	<p>eMarketer's award-winning Web site has been visited by millions of online professionals from over 140 countries, and its newsletter is sent to over 50,000 readers every business day. The articles, market projections and commentaries it publishes are featured by leading news organizations and business publications.</p>

Appendix C: E-commerce resources:

Website	Value - How does it help us?	Other Comments
http://money.howstuffworks.com/ecommerce.htm	<p>Unless you have been living under a rock for the last two years, you have heard about e-commerce! And you have heard about it from several different angles. For example:</p> <p>Still, you may feel like you don't understand e-commerce at all. What is all the hype about? Why the huge valuations? And most importantly, is there a way for you to participate? If you have an e-commerce idea, how might you get started implementing it? If you have had questions like these, then this edition of How Stuff Works will help out by exposing you to the entire e-commerce space. Let's have a look!</p>	<p>Table of Contents:</p> <ul style="list-style-type: none">› Introduction to How E-commerce Works› Commerce› The Elements of Commerce› Why the Hype?› The Dell Example› The Lure of E-commerce› Easy and Hard Aspects of E-commerce› Building an E-commerce Site› Affiliate Programs› Implementing an E-commerce Site› Useful E-commerce Links› Shop or Compare Prices
http://www.econsumer.gov/english/index.html	<p>On April 24, 2001, responding to the challenges of multinational Internet fraud, and working to enhance consumer protection and consumer confidence in e-commerce, thirteen countries unveiled econsumer.gov, a joint effort to gather and share cross-border e-commerce complaints.</p>	<p>The project has two components: a multilingual public Web site, and a government, password-protected Web site. The public site provides general information about consumer protection in all countries that belong to the ICPEN (International Consumer Protection Enforcement Network), contact information for consumer protection authorities in those countries, and an online complaint form. All information is available in English, French, German, and Spanish. Using the existing Consumer Sentinel network (a database of consumer complaint data and other investigative information operated by the U.S. Federal Trade Commission), the incoming complaints will be shared through the government Web site with participating consumer protection law enforcers.</p>

Appendix D: E-Commerce Components and Operations Flow

Sales:

