DEVELOPING E-COMMERCE SKILLS FOR A GLOBAL ECONOMY

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ABSTRACT

Many businesses would like to expand their sales by participating in electronic commerce, but they have no idea how to get started, nor do they understand the details involved in establishing an effective e-commerce site. This paper reviews the knowledge and skills that must be attained, as well as the processes that must be in place, when entering into e-commerce. Topics include hosting services, domain names, website development, search engines, shopping carts, internet merchant accounts and payment gateways, security certificates, and international issues.

Keywords: e-commerce, electronic commerce, website development, Internet

INTRODUCTION

Many businesses feel the need to get involved in e-commerce before they lose sales to their cyberspace competitors – but at the same time, they are overwhelmed by this comparatively new realm of global trade known as e-commerce and are unsure how to manage it. At the same time, there seems to be a lot of confusion on the part of companies and individuals as to what is meant by e-commerce. The majority of sites that appear on the Internet are actually e-marketing sites – sites designed to promote or market a product or idea.

What then is e-commerce? There are three primary types of e-commerce: Business to Business (B2B), Business to Consumer (B2C), and Consumer to Consumer (C2C). B2B e-commerce is applicable to businesses that provide goods and services to other businesses; B2C e-commerce takes place when a business sells to the general public; and C2C e-commerce occurs when one consumer sells directly to another consumer, such as in an online auction (8). This paper focuses on B2C e-commerce. Therefore, e-commerce, as used in this paper, refers to the "exchange of goods and services for payment between a cardholder and merchant when some or all of the transaction is performed via electronic communications" (1). The decisions, and corresponding activities, associated with e-commerce will be reviewed in more detail throughout the paper.

RESEARCH

To learn more about the processes associated with e-commerce, several businesses were interviewed or shadowed. One such company started as a retail store and expanded into e-commerce in an effort to increase sales. Another company added an e-commerce component as a "value-added service" for existing customers. A third company was created strictly for Internet sales, by developing an e-commerce site designed to sell products for existing retail stores, on a commission basis. Furthermore, to learn more about the various components of e-commerce, several web-hosting companies, shopping cart design specialists, and providers of security certificates were interviewed via telephone or e-mail and information was downloaded from internet merchant account providers, web-hosting companies, shopping cart providers, and internet gateway providers. Likewise, domain name searches were conducted and domain names were registered for select sites. Search engine submissions were performed for these same sites.

Web Hosting

One of the first decisions that have to be made in creating an e-commerce site is whether to use a web hosting service or establish an in-house web server. Most companies find it easier and less expensive to use a web hosting service, because in-house servers require web-server software, an appropriate operating system, and a dedicated connection to the Internet, as well as supervision of the system 24 hours a day, seven days a week (3). Internet Service Providers, organizations that provide Internet access for a fee, often offer free or inexpensive website space on their servers when combined with their Internet service, but such sites usually are not adequate for businesses, because of limited security and disk space and inadequate bandwidth. The use of a web hosting service is a good choice for most small- to medium-size businesses. Most hosting companies offer the option of a virtual web server, which makes it appear that the business has its own server and identifies its site in a user-friendly manner (e.g., www.*mysite*.com); an added advantage is that the business can change web hosting companies without changing the URL (uniform resource locator) associated with its business (3). The costs associated with hosting sites can vary drastically, just as the services can vary significantly. When developing an e-commerce site, it is important to select a hosting company that offers sufficient bandwidth and disk space and provides a secure server (which will cost more money than a regular server).

Domain Names

The domain name is usually the name of the business or organization that hosts the web page (e.g., *yahoo.com*). A good place to go to determine if a domain name is available is the Network Solutions website (www.networksolutions.com). Minor modifications to the domain name selection may need to be made if the desired name is not available. For instance, assume that a company named *Art Heads* wants to use the *artheads.com* domain name, but finds that it is not available – it may find that a slight variation, *art-heads.com*, is available. Additionally, due to the growth of the Internet, several new top-level domain abbreviations have become available. For instance, "biz" was added for business sites, so the domain name also could be registered as *artheads.biz*. Some businesses register several versions of the name, and common misspellings, with each pointing to the same server, to improve the probability of being found on the Internet. Once it is determined which applicable domain name is available, it must be registered. A complete list of accredited registrars can be found at the InterNIC website (www.internic.net). Competition has brought the cost down – businesses should shop around to determine which registrar is best suited to meet their needs. Also, some web hosting companies will register the domain name for free, or at a reduced rate, if their hosting services are used.

Web Page Development

The next decision is whether web pages should be developed in-house or outsourced to specialists. Some companies offer web page design, only, while others combine website development with web hosting services. This decision is based upon the levels of technical and design skills that are available within the business, as well as the cost of external services. Keep in mind that the design of a site is crucial to its success – it should be attractive, easy to read, professional looking, and should load rapidly. According to Jim Gilmore, author of *The Experience Economy*, the typical Fortune 500 company spends an average of $1,200,000 on developing its website (5).

Search Engines

For a website to be of value, people must be able to find the site. This is where search engines come into play, but before the web pages are submitted to search engines, several tasks should be completed. A business must determine what words most users will enter when searching the Internet for its products. These words should be entered as *keyword* META tags as the web pages are developed. These same words should appear as text in the page itself. Although search engines cannot read images, keywords also can be entered into the properties of images that are used on the website. The broader the range of relevant keywords and the more often the keywords are repeated, the better the chances that a site will receive a high ranking by search engines. There are limits, however, as to how often a keyword should appear; experience has shown that a keyword should be repeated at least three times, but no more than seven, to avoid being flagged as a "spammer" (7). Likewise, as the *description* META tag is developed, it should contain the primary words that describe the site in the first line of text. Many search engines, as matching sites are listed, will only display the first few words of the description.

There are three types of sites with which businesses should register: directories, search engines, and review sites (2). Directories categorize sites and allow people to browse through the categories; search engines allow users to search the Internet using keywords; and review sites evaluate websites. There are companies that will submit pages to search engines for a fee, using a program that re-submits to select engines on a regular basis, but at the same time, some search engines now ignore "program" submissions. Even if a service is used to register with most search engine sites, it is a good idea for businesses to register at the more important sites, such as Google, themselves. At one time, most search engines accepted submissions for free, but now many engines, particularly directories, have started charging. The time frame between when a site is submitted and when it appears in the index varies among search engines; it may be anywhere from a few days to a few months. Also, once a site appears in a search engine listing, it should be re-checked on a quarterly basis, at least, to see if it still appears. Some search engines will drop a site from their index if it doesn't receive a certain level of traffic.

Shopping Carts

Shopping carts are a necessary feature for businesses heavily involved in e-commerce. Shopping cart software provides a virtual cart in which customers can select items, view the items, and add or delete items before making their electronic purchase. The items in the cart are subtotaled and shipping charges are added before customers are prompted to enter credit card information. There are Internet sites that specialize in shopping carts; additionally, some hosting services offer shopping carts (6). The software must either be installed on the server that hosts the site or on the secure server utilized when processing sensitive information, such as credit cards.

Database of Products

Businesses involved in e-commerce need to maintain a database containing a description of each item available for sale, the price, etc. Typically, this is stored on the server, but most businesses will want the capability to add, modify, or remove items themselves. Many providers of e-commerce database software allow businesses to make changes to their database using a password-protected web page environment.

Internet Merchant Accounts

In order to process a customer's payment electronically, an internet merchant account must be established with an acquiring bank. The merchant account allows the business to process funds from real-time credit card transactions. When a transaction is approved, the funds are added to a business' merchant account and then moved from there to its bank account. The bank charges for credit card transactions over the Internet tend to be slightly higher than regular credit card transaction fees, due to additional risks, and merchant account providers may charge additional fees to cover other services, such as network access fees (4). Not all banks support internet merchant accounts, and those that do typically charge a setup fee. Even if a business is currently accepting credit cards in its business, it will need to open an internet-specific merchant account to process credit cards over the Internet.

Internet Payment Gateway

A gateway translates messages between different types of protocols. The internet payment gateway reformats credit card data and routes it to the authorization networks. The fees for this service are separate from the merchant account fees. Gateways are necessary for all credit card transactions, including a point-of-sale credit card terminal, but internet gateways are slightly different than normal gateways, due to the specialized security protocols (1). It may be helpful to understand the process involved in using a payment gateway system on a typical e-commerce site. The customer selects items from a website and places an order. The total dollar amount is computed and displayed for the customer. The customer completes the payment data (credit card number, etc.) and submits the order. The payment data are usually encrypted by a special pipeline established between the customer's web browser and the server's SSL certificate (explained below). The e-commerce site requests payment "authorization" from the payment gateway; the gateway in turn routes the request to the banks and payment processors. The business then confirms the order and ships the goods or services to the customer (or denies the order if the credit card is rejected). A request for payment is sent to the payment gateway, which then handles the payment request, and the funds are routed to the business' merchant account.

SSL Certificates

On the Internet, website visitors have no reliable way of knowing with whom they are dealing when purchasing from a virtual store (i.e., an e-commerce site). SSL (Secure Socket Layer) is a protocol designed to enable a web browser and a web server to communicate securely. This protocol maintains the security and integrity of the transmission by using encryption and authentication codes. The SSL certificate assures a customer who connects to a secure website that 1) the site is owned by the company that installed the certificate; 2) all information exchanged between the server and the customers is encrypted, and as a result cannot be viewed if intercepted by unauthorized parties; and 3) the data cannot be tampered with over the Internet (9). The certificates are domain name and host name specific, so businesses that utilize multiple domain names will need multiple certificates. SuperCerts are certificates that allow browsers to expand to 128-bit encryption.

There are several ways for users to recognize a secure site. If a site does not have an SSL certificate, users will see an "unlocked" icon in their browser window, whereas a secure site will

display the "locked" icon in the browser window. In addition, the "http" in the web address will normally change to "https" on a secure site. Finally, when a user submits to a website that does not have an SSL certificate, the user's browser may, depending upon how it has been configured, display a warning message, whereas when the user submits to a website with a valid certificate, a message displays informing users that they have entered a secure site. Some shopping carts allow the user to choose between a secure checkout and a regular check out. This is because some user sites have their firewalls set up in such a way that they cannot use a secure checkout option.

International Issues

Another decision that must be made when developing an e-commerce site is whether sales will be made internationally. Businesses wishing to market their products in other countries will want to have their information displayed in the appropriate language(s). Whether the conversion is done in-house or by language translation specialists, there will be a cost associated with the conversion. There are programs that will convert web pages from one language to another, but because of the ambiguity of the English language, the text on the new pages can take on an entirely different meaning. Regardless of whether the following examples actually happened (source unknown), they provide an idea of what *can* happen:

- Clairol introduced the "Mist Stick," a curling iron, in Germany only to find out that "mist" is slang for manure. Not too many people had a use for the "manure stick."
- Chevrolet introduced the Chevy Nova in Latin America, only to find out that in Spanish, nova means "doesn't go."
- Pepsi's "Come alive with the Pepsi Generation" translated into "Pepsi brings your ancestors back from the grave" in Chinese.
- When Gerber started selling baby food in Africa, they used the same packaging as in the US, with the beautiful Caucasian baby on the label. Later, they learned that in Africa, because of the comparatively high illiteracy rate, companies routinely put pictures on the label of what is inside.

Similarly, there are cultural issues that have to be taken into consideration. What is deemed to be perfectly acceptable in one country may be very offensive in another country, whether it be the dress of the hosting country, or slang and jargon used by the hosting company.

Monetary conversions and international shipping charges can be very complex issues. Many companies that provide shopping cart software charge extra for the currency conversion component. Correspondingly, some providers can display shopping carts in only one or two languages while others can convert to several different languages (6). As bank charges, shopping carts, merchant accounts, etc., are studied and compared, businesses wishing to participate in international sales should check the "Fees for International Accounts" component to view the applicable charges and determine which countries are included.

Special rules often apply when submitting a website to search engines in foreign countries. For instance, in Germany, *de.altavista.com* will not index sites with a TLD of *edu* (7). Similarly, many search engines will only index pages from domains bearing the local country code, e.g., *de* for Germany or *es* for Spain. Thus, establishing a foreign mirror site and securing a domain name consistent with local naming conventions will aid in establishing a presence in indices otherwise

unavailable to foreign entities. Some companies that are heavily involved in overseas sales have also found that many impediments to international e-commerce can be avoided by establishing a branch office in the targeted foreign market and incorporating under the foreign nation's laws.

Summary of Costs

Although the costs will vary, depending upon the providers selected, the features utilized, and the number of the processes that are performed in-house, the following provides a summary of some of the items that should be taken into consideration when developing an e-commerce site:

- Hardware (computer and corresponding peripheral devices) and software
- Internet Service Provider (to provide access to the Internet)
- Web page design and creation
- Website maintenance
- Web hosting service (with a secure server)
- Domain name (selection and registration)
- Search engines (submissions, use of keywords)
- Shopping cart software
- Database software (for updating product/service information on website)
- Internet merchant account
- Internet payment gateway
- SSL certificate
- Additional fees related to international sales

There are companies that provide a combination of some or all of these services. Similarly, some companies will assist businesses, for a fee, in establishing their sites. For instance, they will order and install SSL certificates. As services are compared, a cost/benefit analysis should be performed, but at the same time, it is a good idea to work with established companies. There are some providers that are considerably less expensive than others, but in the past, some businesses have put their trust in such providers, just to find that in a few months the provider was no longer in business. It is important to ask for references, compare prices and features, and ask questions.

Other Options

For businesses that may decide e-commerce is more complicated and costly than they can afford, there are "hybrid" options. For instance, some businesses offer a shopping cart and allow their customers to submit credit card information, but they manually enter the credit card information, just as they would if someone phoned in an order (eliminating the need for internet payment gateways and internet merchant accounts). Others utilize interactive forms (forms that allow the customer to enter the order information), rather than shopping cart software. Similarly, some companies provide an 800 number for credit card submission, reducing or eliminating the need for an SSL certificate. Obviously, for large businesses, these options may not be realistic, but for small businesses, they seem to provide an economical compromise.

One business that was interviewed noted that in the first year that an e-commerce component was added, only 4% of its sales were from the Internet. That figure has since grown to 70%. The company has found Internet sales to be so cost-effective that it is considering closing its retail

store, given that the website provides greater flexibility in terms of time (a retail store has to be staffed during open hours) and lower overhead costs. Another interviewee indicated that he created his website exclusively to serve as an e-commerce site for other businesses. When an order arrives, the credit card information is processed and a confirmation is sent to the customer; he then e-mails the order to the applicable retail business, which in turn ships the merchandise. The money is automatically deposited into his account; the net amount of the sale, after his commission has been deducted, is then sent to the retailer. He is able to make a profit with little overhead costs; at the same time, the website provides retailers with another avenue for selling their products, without the investment required to enter into the realm of e-commerce on their own.

CONCLUSION

As has been shown, there is more than one way to establish an e-commerce site. Likewise, it should be obvious by now that e-commerce is much more than simply displaying a company's information on a web page. There are several issues that must be considered and processes that must be completed when establishing an e-commerce site. Although many companies have been very successful in using the Internet to increase sales, we have all heard the stories of *dot com* companies that failed. It is important to heed the pitfalls and hidden costs summarized above, as well as the issues and concerns that need to be addressed when conducting sales both electronically and internationally, if one wishes to compete successfully in the ever-changing field of e-commerce.

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