



Solving e-commerce issues: some Web strategies

Antoinette Cool

Comparex Africa

Post Graduate Diploma in Information Management

RAU University

antoinettec@comparexafrica.co.za

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1 Introduction

Electronic commerce (e-commerce) is sharing business information, maintaining business relationships and conducting business transactions by means of telecommunications networks. Traditional e-commerce, conducted with the use of information technologies that centre on electronic data interchange (EDI) over proprietary value-added networks, is rapidly moving to the Internet. Using this as the starting point, the aim of this research was to clarify certain points of e-commerce for the use of a possible Internet-commerce venture. The discussion points reported here cover a general view of e-commerce and include Internet commerce versus e-commerce, Internet commerce models, the Internet commerce cycle, Internet commerce merchants and acquiring institutions, content, infrastructure, security and return on investment (ROI). These points are used as the structure to develop and implement a Web strategy for a particular company.

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2 Internet commerce versus e-commerce

E-commerce states the following:

'E-commerce, ecommerce or electronic commerce is defined as the conduct of a financial transactions by electronic means. With the growth of commerce on the Internet and the Web, ecommerce often refers to purchases from online stores on the Web, otherwise known as e-commerce Web sites. They may also be referred to as "virtual-stores" or cyber stores. Since the transaction goes through the Internet and the Web, some have suggested another term: I-commerce' (E-commerce, electronic commerce ...).

From this basic definition it seems that, contradictory to the common perception that e-commerce originated from the Internet boom era, the implementation of e-commerce projects has been helping companies to become more effective and profitable for a long time. According to Zwass (1998), the first steps toward electronic commerce were made during the Berlin Airlift, which laid the foundations for EDI. EDI has been instrumental in establishing ties of mutual information exchange between companies and their suppliers and customers. These information channels allow companies to exchange information electronically as forms, bar codes and files, and allow people who work in these departments to move their focus away from managing documents to managing the processes that require the documents. Although not strictly adhering to the definition given above, many e-commerce projects involve the movement of information between companies without the direct payment that would, for example, come into play with a transaction like the purchase of a book or CD on Amazon.com.

According to the definition of Zwass (1998), e-commerce has developed and evolved to such an extent that internal and external business processes are starting to become so enmeshed that it would be unfruitful to separate them. There is therefore no reason to draw a specific distinction between intra-organizational business processes and inter-organizational ones. Therefore, e-commerce could also be viewed as a process within a company. Zwass (1998) proposes a wider description of e-commerce that also includes non-financial business transactions, the sharing of business information and the maintenance of business relationships (when conducted by means of telecommunications networks).

Given the fact that e-commerce includes such a wide range of possible implementations, it would be erroneous to see e-commerce solely as business conducted via the Internet. Instead, for the benefit of this research, the term 'Internet commerce' has been used to distinguish Internet commerce from other types of e-commerce.

The author investigated one particular company to establish its Internet-based e-business opportunities. [XYZ stationery company](#) sells stationery to corporate clients. Although this company previously dealt with some of its suppliers by using an e-business solution in the procurement of raw materials, the company still received orders from its account customers via telephone and fax. Given the fact that the larger clients of the stationery company place the most orders, it would add considerably to XYs's business strategy to be able to track specifically which customers bring in the most revenue. XYZ should establish system rules to give even greater benefits to these customers, either in the form of some proportional discount, or possibly in the form of preferential processing of orders.

However, it was hoped that the implementation of such a system via the Internet would specifically result in faster and more accurate transactions. Given a successful implementation of the first stages of the Internet commerce site (dealing with existing customers), the site could be opened to other people, such as smaller companies, schools and distributors who would want to buy larger quantities of the products to obtain greater discount. The decision to look at an Internet commerce solution, given the greater security afforded by other e-business elements such as EDI, was taken due to the greater flexibility and scalability offered by an Internet business solution.

3 Internet commerce models

Given the broad possible avenues for the implementation of Internet-based e-business solutions, some sources propose that various kinds of businesses (like brokerages, advertising, infomediaries, merchants, manufacturers, community and subscription businesses) require different business models.

However, most sources tend to support models of Internet commerce that focus less on the specific kind of business conducted (like those distinguished above) and more on the relationship between the entities involved in the transaction. The most popular of these models include business-to-business (B2B) and business-to-consumer (B2C) ones. However, some of the other possible models include consumer-to-consumer (such as auction and community sites) and business-to-government (B2G), which is a relatively new concept and is sometimes referred to as G2B. Finally, there is also G2C, which refers to government transaction with citizens, such as the payment of parking tickets or taxes.

It seems that during the initial dot.com boom, the focus on Internet business solutions was mainly on B2C implementations. However, the focus soon moved to the possible benefits Internet-based B2B transactions could have. These B2B transactions could build on advances that were brought about in the field of e-commerce, and bring closer links between companies, their suppliers and their customers. Also, given the much larger volumes of products and services required by large companies (as opposed to the individuals that B2C Internet commerce focussed on), it was clear that B2B Internet commerce, if correctly implemented, would bring more immediate benefits. This realization led to the construction of many B2B hubs, (with varying levels of success) where companies could buy and sell goods and services in bulk (in many cases without the traditional middleman).

A more mundane Internet commerce venture in the B2B field includes transactions that are normally concluded with the use of leased lines: transferring files between suppliers and their customers. These transactions retain much of the same functionality while being concluded with the help of a different type of connection between the buyer and the seller. This connection is the Internet. Although using the Internet as a transfer point for data increases the security concerns of companies communicating in this way, it also has the benefit of allowing easier access to a wider group of users and suppliers.

The growth of B2G initiatives has been gaining ground in recent time. The government is the natural next 'company' to become involved in Internet commerce. While B2B Internet commerce enables companies to put suppliers and buyers into contact with each other, governments have even wider procurement requirements. With the use of B2G initiatives, even smaller companies are able to tender for government business, and governments are able to procure goods from a much wider range of suppliers, since the process of dealing with suppliers is simplified.

From another angle, the development of wider Web-based technologies, such as Web services, is making it easier for governments to add additional functionality to currently existing systems, which might enable the use of B2G initiatives. This functionality could be employed to allow governments to transact directly with citizens, accepting payment for various licence fees and renewal of documents.

Given these models, the stationery company would start off being involved in the B2B side of Internet commerce and, if successful in this sector, may choose to expand into the B2C

and B2G field.

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4 Commerce cycle

It seems that there are as many views on the Internet commerce cycle as there are companies involved in Internet commerce. This cycle is obviously very dependent on the kind of business conducted; whether it is the sale of products and services or the exchange of data (as examples). However, it seems that elements of creation or acquisition, collaboration, management and delivery are always involved in some way. At the time of this research project, XYZ Stationery supplied mainly to large companies, most of which hold accounts with XYZ. They were billed for all the products delivered during the month. The Internet commerce facilities should first be extended to this group of customers after the successful pilot implementation of the system.

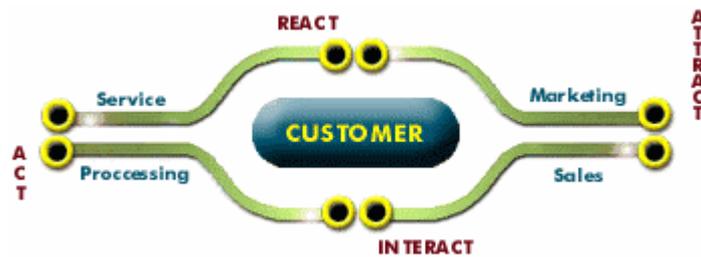
Although the site would start off with a limited set of functionality, a payment system should be implemented from the beginning. This would make it easier to roll out the system to the general public when it is deemed ready. However, customers would continue to be billed through the normal channels. Internet transactions would be debited from a company credit card and would be displayed on normal account advice, since some of the orders may initially still be processed through traditional channels like fax or phone.

The business cycle was proposed as follows: A customer connects to XYZ Stationery's Web site. The homepage provides links to descriptions of the products available. However, since the customer will most likely order the same kinds of products all the time (and will not need to inspect the properties of the various product with every purchase), customers can also enter the secure part of the site from the home page by making use of their username and password. The username and password are compared with those in the customer database, and the customer is either given access to the secure page or given a message to contact the company to set up a new user. Once on the secure page, customers can either select products required or request a statement detailing their previous transactions with the company. The statement data will originate from the accounts database, and will therefore also include transactions concluded via the traditional avenues of fax and phone.

Once users have selected the required products and submitted the request, the system will check whether all the products are available for immediate shipping, and whether the purchasing company has enough credit available for the transaction. The user is then presented with a summary of the purchase order, together with the address and contact person to whom the delivery is to be made. The user can still make changes to this form. Once the user is satisfied, the form can be submitted together with the company credit card details. This will then be sent to the acquiring institution. (This part of the cycle is discussed in greater detail below.) Once approval is returned, the user is issued with a receipt and a copy is e-mailed to the designated debtors clerk at the buyer's company. Finally, a pick list and delivery note is channelled to the warehouse, and goods are shipped to the particular customer.

All of these processes are summarised in Figure 1.

Figure 1 Internet commerce cycle (Commerce.net 2002)



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5 Security

In the physical world, there are many ways of safeguarding data, including strategies such as authentication of people by means of ID cards, passwords and access control. Locks and keys control physical access to data, and confidential communication is ensured through sealed letters and private conversations. Any security plan to protect the company that is providing the Internet commerce solution, as well as its clients that access the site, must be protected online.

According to De Turckheim (2002), there are many distinct reasons why an effective security system must be in place for Internet commerce implementations. These include the threats of hackers and viruses that may cause the loss of critical data assets. The perceived security of an Internet commerce site is also important. People are not likely to hand over sensitive information such as their credit card details and addresses if they are not sure that these will not fall into the wrong hands. Factors (other than actual physical security measures) that would affect the confidence of site users (and their likelihood to purchase from a site) have to do with things like the company image (whether they have a trusted, non-Internet presence), the consumer confidence in the company and the business continuity that the Internet commerce plan affords (i.e. if there is a chance of data corruption or data being incorrectly moved or assigned).

In the virtual world, the solution to the problems of identification, authentication and privacy in computer-based systems lies in cryptography and digital certificate technology. Cryptographic techniques, such as encryption and digital signatures, form an important part of this security technology. 'Key'-based encryption is a popular technique for protecting data. Such a system involves data being coded according to a certain algorithm to which only certain people have the 'key' for decoding the algorithm.

To ensure that privileged account information does not fall into the wrong hands, a username and password system should be implemented on the XYZ Stationery site. This acts as the first-tier protection of data. Payments and transactions will be subject to the second-tier security provided by secure electronic transactions protocol (SET) credit card transaction security.

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6 Internet commerce merchants and acquiring institutions

Since the rise in popularity of Internet commerce, there has been a requirement for a system whereby buyers and sellers would be able to safely conduct financial transactions, with the buyer being assured that credit card details will not be misused, and sellers being assured that payment will be received for goods. SET is one of the most widely used of these systems. It consists of a complete protocol and infrastructure specification for supporting bank card payments over the Internet. It was developed in 1995 by Visa, MasterCard,

VeriSign and many other organizations and technology vendors. With this system, the merchant (i.e. the seller in the Internet commerce transaction) passes on the verification and authorization of credit card details to the acquiring institution. This was an important breakthrough in the way that payments are processed using the Internet, since it cedes the actual financial transaction to the financial institution, while the Internet commerce vendor may concentrate on its own specific business, while being sure that payment will be received in due course.

VeriSign in particular describes the transaction as follows:

'After the cardholder agrees to make a purchase from the merchant, the cardholder sends an online payment instruction to the merchant. The merchant then communicates with the appropriate financial institution (acquirer) via a payment gateway, forwarding the payment instruction, to authorize and capture the transaction. The capturing is done by the acquiring bank (leaving the merchant out of the transaction).'

Given the fact that the initial implementation of the XYZ Stationery Internet commerce site would only involve current customers, the implementation of a SET seemed somewhat redundant. However, starting to channel the incoming funds correctly and enabling better management of movement of payments was necessary for the future expansion.

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7 Content

The provision of content is one of the main services offered by Internet commerce vendors. This kind of content would include product information, news and educational content. Distinct from many other Internet Commerce ventures, XYZ would not concentrate on providing content to customers, save the details on the products supplied by them. This content would be taken directly from the company operations databases (in the case of product lines) to ensure that content was always up-to-date. The content would be presented in a way that was consistent, clear and easy to use, incorporating the XYZ corporate colours.

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8 Infrastructure

With infrastructure, one must look at both the infrastructure required by the company providing the Internet commerce site, as well as the infrastructure required by users, to be able to access a site. The specific requirements in terms of infrastructure, users and management depend on the size and complexity of the site and the expected number of users. Obviously, there is a big difference in the bandwidth, processing and ancillary (operating systems and physical connectivity) requirements of a company like Amazon.com and a small local stationary wholesale company.

XYZ proposed to host a dedicated Internet server on company premises, using their currently (under-utilized) ISDN line to their service provider.

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9 Return on investment (ROI)

ROI quantifies the financial benefits of a project after subtracting the associated costs. According to Sawhney (2002), this metric will provide immediate feedback on the type of

funding a project justifies, but it is not always the best metric to determine the value of a project such as an Internet commerce site, since the return may be difficult to measure and initially not immediately apparent. However, it remains a useful way to gauge the financial implications of a specific project. Sawhney (2002) cautions that, to be able to measure ROI accurately, clearly defined goals and specific planning are required. Also, ROI is not a suitable way to measure projects that are implemented to improve competitive advantage and other strategies that cannot realistically be omitted if the ROI seems low.

XYZ operated from the premise that the Internet commerce site would initially require a significant investment. The company did not expect any significant return on investment within the first two years of implementation. However, the greater computerization of the order chain would translate to significant savings in time and administration in the medium term. Finally, this initial implementation would be done with the expectation towards significant growth in the sales of the company when the site was opened to the general public, by which time the initial expenditure into the development of the site would have been expensed.

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10 Conclusion

The development of Internet commerce techniques has irrevocably changed the face of business, as well as e-business. Many companies will be able to improve levels of functionality and customer satisfaction, as well as long-term profitability, through the employment of Internet commerce.

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