A Consumer-Based Framework for Understanding e-Commerce Relationships

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Abstract

This paper presents a framework for understanding the types of interactions that a firm can have with its customers. Existing frameworks or models provide management with a strong dose of technical perspective but little from a marketing perspective. The framework that is presented is based on the type of interaction that a firm can have with its customers. The framework is based on whether or not there is a monetary transaction with the customer and whether or not there is a relationship with the firm in the mind of the customer.

Introduction

There are few frameworks or models to guide management in determining which Internet applications are most suitable to its given situation, or how companies can use Internet technology to gain competitive advantage (Riggins and Rhee, 1998). Most research in Internet usage has focused on electronic commerce (e-commerce). E-Commerce refers to the undertaking of normal commercial, government and personal activities by means of computers and telecommunications networks and includes a wide range of activities involving the exchange of information (Chan and Swatman, 1999). There are two major dichotomies of e-commerce research: business to business (B2B), in which businesses buy and sell among themselves, and business to consumer (B2C), in which consumers purchase products and services from businesses (Shim, et al., 2000). B2B is considered by some to be an extension of the earlier electronic data interchange (EDI) where organizations established proprietary computer networks among trading partners (McLean, et al., 1999).

Clarke (1993) argues that e-commerce must encompass much more than EDI, but then goes on to present a model that is strongly focused on procurement to the exclusion of other components of e-commerce. His five-phase B2B model integrates the essential phases of a business transaction: pre-contractual, contractual, ordering and logistics, settlement, and post-processing. In separate studies, both Shim et al., (2000) and Dogac et al. (2001) examine other B2B e-commerce frameworks. Frameworks such as Open Buying on the Internet (OBI), eCo, RosettaNet, Commerce XML, MESChain, and BizTalk are examined. All of these frameworks are intended for B2B, and are not sufficiently broad in scope to account for the full range of e-commerce activities or participants.

While some B2C frameworks do exist, they are also limited by their exclusion of B2B. Wanniger (1998) presents a B2C framework based on business functions, related processes and infrastructure. The framework takes into account interactions between business and its customers, but does not consider the various degrees of relationships that exist in a B2C interaction. Further, it ignores the issue of B2B.

Some frameworks appear sufficiently broad to incorporate both B2B and B2C. Several layered or hierarchical frameworks based, at least in part, on infrastructure have been developed. Zwass (1998), Schutzer (1998), and McLean et al. (1999) present a layered framework based on implementation details. The frameworks share an infrastructure layer, a services layer, and an applications layer. The infrastructure layer provides for the technological infrastructure of e-commerce. The services layer provides traditional B2B functionality. The applications layer includes applications such as shopping, online advertising and marketing, purchasing and procurement, information and entertainment, banking, etc. (Kalakota and Whinston, 1997; Zwass, 1996). Chan and

Swatman (1999) present a dynamically weighted meta-view of e-commerce that incorporates services, infrastructure, and legal aspects. Their intent is to provide an inclusive framework of e-commerce types, activities, and capabilities. The framework covers not only Internet-based e-commerce, but also those primarily EDI-based B2B activities that preceded the commercialization of the Internet.

While the abovementioned "infrastructure" models handle both B2B and B2C, no framework could be found to explain the purpose or use of the Internet in e-commerce. The model developed by Riggins and Rhee (1998) seemed to be the most promising. Their Electronic Commerce Domain Matrix provides a model of e-commerce based on the relationship between trading partners (technology enhanced or technology facilitated) and the location of the application users relative to the system firewall (internal or external). Like the model presented in this paper, the Domain Matrix categorizes e-commerce applications into four categories that can be helpful in identifying relationships and technology needs. Our matrix model differs in that it does not rely on technology to define the quadrants, but rather the quadrants themselves require different levels of technology to deliver the required functionality.

Analysis

A review of the taxonomies developed to describe the interaction that users have with the Internet is summarized in Table 1. The table shows that a technological perspective dominates present attempts to describe the interaction that users have with the Internet. Clarke and Wanniger have a usage perspective to their models but are very myopic in their view of Internet usage, the former dealing with only purchasing and the later with functions and not relationships.

TABLE 1
FRAMEWORK OVERVIEW

	B2B	B2C	Technology-driven	Usage-driven
Clarke	✓			✓
Wanniger		✓		✓
Zwass	✓	✓	✓	
Schutzer	✓	✓	✓	
McLean	✓	✓	✓	
Chan	✓	✓	✓	
Riggins	✓	✓	✓	

Taking a Market View of the Internet and e-commerce

We believe that one of the problems that exists with organizations developing their Internet strategy is that "technocrats" have dominated this arena. They look more at the technology instead of the basic relationship that exists between their organization and the customer with whom the company interacts.

Technology aside, the Internet is nothing more than another channel choice for an organization. It allows an organization to interact directly with its customers in an electronic format. The format of the interaction may have been a conscious decision or one that developed by happenstance.

We present a framework based on the type of interactions that an organization can develop with customers through the Internet. The framework is based on the basic forms of market interaction that the technology of the Internet allows. The framework is not an all-inclusive description of activity that exists on the Internet. We restrict this framework to the type of websites that an organization can build to have contact with customers. While the framework itself is void of any technological dimensions, the interactions that are available in each quadrant require significantly different levels of technology for the interactions to be accomplished.

The Model

The basis of our framework is provided in Figure 1. The horizontal axis describes two conditions -- non-transactional and transactional interactions. This is an easy bimodal interaction to understand. Non-transactional interactions are all of the interactions over the Internet in which no sale is intended. This covers a wide range of Internet activity in which the objective is the transfer of information. For example, an organization can provide information about itself, a cause, or its products. The transactional sites are sites that have some level of sales activity intended. Pornographic sites are the best example of transactional sites, where for a flat fee an individual has access to all content twenty-four hours a day, seven days a week. These sites require the use of credit card information for access and automatic fee collection. The simplest transactional site is one where information is provided and a customer sends funds to the organization. No-credit card processing is required. The most sophisticated transactional interaction requires the ability to process credit card information and provide the organizational product instantly over the Internet.

The vertical axis in Figure 1 is based on whether or not there is a relationship between the organization and the customer. This dimension of the interaction is described as either non-relational or relational. In our development of this framework, this dimension has been the most difficult to describe. Relational, as we define it is in the mind of the customer. This is very important for the organization to recognize. Many sites use the term "member" and require the user of the site to provide a significant amount of personal information so that an ID and password can be issued. This does not necessarily mean to the customer that there is a relationship with the organization. Many members of sites like Travelocity use the information provided by the site and purchase travel related offerings -- airline tickets, hotel reservations, automobile reservations and other travel related purchases -- without, in their minds, being a member of anything.

This leads to a description of the four interaction types that exist:
1) non-transactional/non-relational
2) non-transactional/relational
3) transactional/non-relational
4) transactional/relational

FIGURE 1
A CUSTOMER BASED FRAMEWORK
FOR UNDERSTANDING e-COMMERCE RELATIONSHIPS
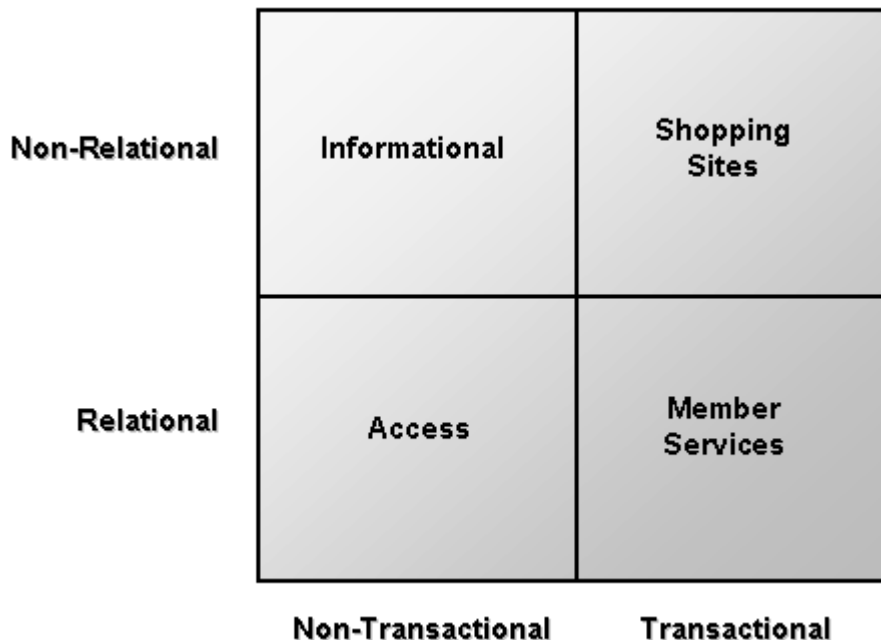
The non-transactional/non-relational quadrant is referred to as INFORMATIONAL. Informational sites are the simplest sites to construct and can provide small organizations a means of presenting themselves very professionally to the market. Informational sites, as the name implies, are sites that only contain information. The simplest form of this website is a one page "position" statement by a special interest group. A more sophisticated form of this type of website is one in which an organization provides information about itself, such as its products, its officers, and/or its financial statements. No attempt is made to sell anything at these types of websites.

The non-transaction/relational grid has been tentatively labeled the ACCESS sites. These sites require the customer to register and be accepted at the site as a member. The customer's access is restricted via one or more levels of security. These sites may contain sensitive information, such as stock portfolio information, personal records, or medical history.

The transactional/non-membership grid has been tentatively labeled the SHOPPING SITES. In this grid the website is presented as an alternative to traditional brick and mortar store. While the seller in this grid is interested in developing a relationship with the customer, the customer is often only interested in finding a product and getting it at a good price.

The last grid, the relational/transactional sites, is labeled MEMBER SERVICES. These sites are found more in the B2B arena than in the consumer sector. At these websites the "members" have a significant relationship and are mutually dependent on the flow of information.

Technology Requirements

Given the interaction that an organization may want to have with a customer group (target market), we can now describe the technical requirements that are needed to deliver the desired relationship.

The INFORMATIONAL sites, the non-transactional/non-relational interaction is the most simple to implement. The interaction can be achieved via a simple web site designed in html and can consist of a single page or a series of linked pages. No special hardware is required to implement such a site. Several free services are available to host this type of an Internet site.

The ACCESS sites, the non-transactional/relational interaction, require some form of restricted access, usually implemented through the use of a user name and password. Simple password protection can be implemented the use of simple scripts, although more sophisticated password protection might involve more advanced approaches in conjunction with a database of users. Again, special hardware is seldom involved.

The SHOPPING SITES interaction, transactional/non-relational, is where Internet sales activity with consumers takes place. There are varying degrees of transactions, but some of the more advanced shopping sites involve a database of items, specialized shopping cart software, and a credit card processing service.

The MEMBER SERVICE, or transactional/relational interaction, requires more sophisticated features and is the most technologically demanding site. Once again, passwords, databases of users and products, and specialized purchasing software are needed, as are specialized security measures. If the site is used for B2B applications then specialized hardware may also be necessary.

Conclusion

We have presented a basic conceptual framework for understanding the types of interactions that a firm can have with its customers. The type of relationship that the firm desires, or desires to move to, influences the technology that a firm needs. Transactional/non-transactional and relational/non-relational dimensions provide the rational behind the four types of interactions that the firm can expect from use of the Internet to interact with customers.

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