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James J. Cappel
Western Michigian University

MArk A. Myerscough
University of Texas, myerscou@cobaf.unt.edu

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James J. Cappel
Dept. of Business Information Systems
Haworth College of Business
Western Michigan University
Kalamazoo, Michigan 49008-3821
(616) 387-5710

Mark A. Myerscough
Information Systems Research Center
Business Computer Information Systems Dept.
University of North Texas
P.O. Box 13677
Denton, Texas 76203
(817) 565-3128
Myerscou@cobaf.unt.edu

"We're not far from the day when an organization without a home page will be like an organization without a fax machine."
- John Patrick, Vice-President, IBM Internet Applications

The growth of the World Wide Web, also known as WWW or "the Web," as a technology is almost unparalleled in the history of computing. The number of WWW sites increased more than six times in just one year from January 1994 to January 1995 (Levy 1995/1996). According to another source, the number of registered sites on the Internet has risen from 4 in 1970 to over 5,000, 000 in 1996 (Internet Hosts, Worldwide 1995), with by far, the greatest growth occurring in the past three years, coinciding with the introduction and expansion of the World Wide Web. Moreover, the number of North American WWW users is estimated to be between 17 million, according to a Louis Harris poll (Snider and Maney 1996), to 24 million based on a recent Nielsen survey (Levy 1995/96). The WWW has managed to permeate into the mainstream of everyday life. For example, the general public encounters advertisements in the media almost daily that include companies' Universal Resource Locators (URLs), addresses on the World Wide Web.

The World Wide Web is a distributed hypertext-based information system that was conceived at CERN, the European Laboratory for Particle Physics, as a vehicle for sharing information among the world's scientists about high-energy physics (Tapscott 1996). To facilitate global information sharing, CERN developed the concepts of HTTP, the hypertext transport protocol used by WWW servers, and Hypertext Markup Language (HTML), a language that governs the creation of Web documents so that they can be read by WWW browsers. The World Wide Web exists as one component of the Internet. While still in its infancy, it has already vastly exceeded the expectations of its original developers. The release of NCSA's graphical-based browser Mosaic in the fall of 1993 resulted in an explosion of utilization that is unprecedented in global environments. Never before has it been so easy to access information on a world-wide basis, and never before have so many people been exposed to and used a single information-sharing system.

The Role of the IS Professional

Over recent decades, the role of the IS professional has evolved beyond programming/systems analysis to encompass other duties. According to David Winski of DTW Associates, IS professionals today wear a "three-cornered hat," serving in the roles of utility provider (systems developer), change agent (in activities such as business process reengineering), and business partner (integrating information technology into products and services) (I/S Analyzer 1992). The "business partner" role suggests that the IS function can play an important role in the attainment of competitive advantage (Porter and Millar 1985). It also suggests that, beyond having technical skills, IS professionals are expected to possess savvy business skills to boost their company's productivity and "bottom line performance."

Thus, WWW development projects represent an important opportunity for IS professionals to become involved in their company as a business partner. In many cases, IS professionals are called upon to lead WWW development efforts or to serve as members of cross-functional WWW development teams. To fill this role successfully, IS professionals should be cognizant of the potential uses of the WWW for electronic commerce. This paper illuminates this issue by presenting a classification scheme to identify the ways that companies are currently using the WWW to meet their business goals.

A Classification Scheme of WWW Uses

A categorization of company uses of the WWW for electronic commerce is shown in Figure 1, along with examples of sites that represent each of these types. This classification scheme is designed to cover the major uses of the Web by "for-profit" companies. Consequently, it does not address uses of the WWW by other types of organizations such as governmental or "non-profit" organizations. While some writers have defined electronic commerce strictly as "the buying and selling of information, products, and services via computer networks" (Kalakota and Whinston 1996), the proposed classification scheme assumes a broader definition that recognizes WWW uses that involve "support for any kind of business transactions over a digital infrastructure" (Bloch et al. 1996). As indicated in Figure 1, companies are utilizing the WWW today for purposes of: (1) promoting greater awareness of their companies and products; (2) providing customer support for their products; (3) offering sales of products or services directly or indirectly either exclusively through the Web or to supplement existing marketing channels; (4) selling advertising space on Web sites to other companies; and (5) offering electronic information services.

The first category of WWW usage involves creating a marketplace awareness for a company or its goods or services. For example, the primary focus of Frito Lay's site is to promote its company and brand names.

Utilizing the WWW to provide customer support for products is a common use of the WWW by software companies such as Microsoft and Novell. The services offered include providing frequently asked question files and technical specifications for products.

WWW uses for sales purposes encompass indirect sales, direct sales, and virtual companies. "Indirect sales" over the WWW involves sites that provide detailed examples, pictures, sizing information, and other details about specific products and ordering information (typically via a 1-800 phone number). However, these sites do not accept electronic orders. In contrast, "direct sales" sites supplement existing channels of distribution by providing the ability to perform on-line transactions. Finally, the WWW has led to the creation of virtual companies that sell their products exclusively through the Web. These companies include Condom Mania and virtual shopping malls.

Figure 1
Company Uses of the Web for Electronic Commerce

1. Market place awareness
    - http:/www.fritolay.com/
    - http:/www.gatorade.com/
2. Customer Support
    - http://www.developer.ibm.com/
    - http://netwire.novell.com/servsup/
3. Sales
    1. Indirect
        - http://www.jcpenney.com/
        - http://www.ultranet.com/~adamo/CA_Gold/products.htm
    2. Direct
        - http://www.800flowers.com/shop/index.html
        - http://www.midcoast.com/cybermall/indexcm.htm
    3. Virtual Companies
        - Condom Country - http://www.condom.com/
        - http://www.nwpros.com/Mall/mall.html
4. Advertising
    - http://www.publicita.com/homepage.html
    - http://www.ultimate.org/
    - http://www.wp.com/CYBERPAGE/
5. Electronic Information Services
    0. Subscription-Based
        - http://www.espnnet.com/
        - http://www.mids.com/
    1. Non Subscription-Based
        - http://www.disneychannel.com/
    2. Local/Regional Broadcast Stations (TV/Radio)
        - http://www.kzps.com/kzps
        - http://www.kxas.com/

A fourth use of the WWW for electronic commerce is for advertising. That is, some companies have developed Web sites explicitly for the purpose of selling advertising space on their sites to other organizations. For example, CyberPage Advertising

(http://www.wp.com/CYBERPAGE/) sells advertisements to businesses from the Texas Gulf-Coast region. The other two Web sites in this category in Figure 1 provide advertising space as well as services for developing Web-based advertisements. Advertising revenues for the WWW were estimated at $10 million for 1995, and Forrester Research, Inc. predicted that these revenues will reach $2.2 billion by the year 2000 (Maddox, Wagner, and Wilder, 1995).

The final category, electronic information services, encompasses subscription-based services, non subscription- based services, and Web sites for local or regional broadcasting stations. Many of these sites are related to the entertainment industry. Subscription services typically charge a monthly fee for accessing their sites. A portion of these sites can generally be accessed free-of-charge, but users must pay for additional features. For example, ESPNET provides NFL game results free but charges for access to detailed analysis and drive charts. In contrast, users have complete access to non subscription service sites. Finally, many local and regional broadcast stations provide Web sites that contain information about news, weather, sports, promotional contests, and community events.

It should be noted that this classification scheme was developed based largely on the authors' own usage of the World Wide Web, not from a comprehensive or systematic investigation. Consequently, it is quite possible that some refinements of this typology are needed. It should also be noted that this scheme does not "neatly" capture every WWW site; that is, certain sites may be of a "hybrid" nature that possess characteristics of more than one of the types identified. Still, the proposed conceptual scheme represents an important step toward gaining a greater understanding of company WWW usage.

Conclusion and Discussion

Weick (1995) identifies environmental turbulence as one condition that necessitates organizational sense making. That is, in the wake of rapid change, there is a need for conceptual schemes to explain and make "order out of the chaos." Clearly, WWW applications for electronic commerce have accelerated so quickly in the past three years, that little attention has been paid to understanding WWW usage at a higher level. This paper represents one attempt to do this. The proposed classification scheme identifies a range of possibilities for company uses of the WWW. This scheme should enhance the ability of IS professionals to serve as "business partners" in the development of WWW sites. In addition, this scheme has utility for academicians in teaching the WWW from a business perspective as well as for formulating hypotheses and theories to guide future research in this domain.

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