CATEGORIZING THE SUPPLIER CONTENT OF PUBLIC WEB SITES

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ABSTRACT

Web-based supplier communication and supplier diversity efforts have received little research attention to date. This study identifies the supplier communication and supplier diversity content on the public Web sites of the firms on the 2000 Fortune 500 list and creates a categorization scheme for that content. Just over a quarter (27.1%) of these large firms' public Web sites mention majority (i.e., primary) supplier issues or supplier diversity. Only 28.4% of Fortune 500 firms with supplier content actually describe a formal supplier diversity program on their public Web site. Therefore, public Web sites are largely underutilized as a means of interacting with potential suppliers from a diverse population. The most common supplier diversity content for prospective suppliers on Fortune 500 public Web sites is: certification requirements, on-line applications, and a contact name/title for the diversity manager.

INTRODUCTION

Public Web sites are actively used for both business-to-consumer and business-to-business commerce. Organizations are finding the Web to be an effective way to attract, communicate, and carry out transactions with trading partners such as customers and suppliers. For supplier interactions, the Web is beginning to replace earlier technologies, such as EDI, as a fast and efficient means of paperless interaction.

Suppliers can have an existing relationship with a buying firm and link to that firm using either the buyer's public Web site, or a private, Web-based extranet. The Web may also serve as a means of communicating with potential suppliers. A public Web site is a convenient means of "telling" prospective suppliers about the buyer's price and quality expectations, and for publishing application forms. Many firms are interested in attracting a diverse base of suppliers, so the public Web sites of buying firms can also be an outlet for publicizing supplier diversity efforts.

This study examines Web-based supplier communications. The public Web sites of each of the firms on the 2000 Fortune 500 list were examined for majority, or primary, supplier communication and supplier diversity content. The objectives of the study are to describe and then categorize Web-based supplier communication and supplier diversity content on the public Web sites of these large corporations. The following sections review related studies, describe this study, discuss the findings, and suggest directions for future research.

SUPPLY CHAIN AND DIVERSITY RESEARCH

Two areas in the research literature support this present study: electronic, business-to-business (B2B) supply chain linkages, and diversity programs, including supplier diversity efforts. Electronic B2B supply chain linking is by far the most actively researched of these two areas.

Web-based B2B commerce has many benefits, such as enabling firms to create "end-to-end supply grids containing real time business process facilities" (Fingar, 2000). Some industries have not aggressively sought Web-based supplier links. A recent survey of large retailers found that these firms have been slow to use the Web to link with suppliers; "only seven percent of respondents with Web sites …use them to collaborate with trading partners" (CSC, 2000). The CSC study notes that Web links can improve inventory management in the areas of shipment tracking and merchandise allocation. Conversely, other firms actively use the Web for supplier interactions. For example, IBM does business with 95% of its suppliers over the Internet (Carbone, 2000). Many of IBM's suppliers are transitioning from EDI to Web links.

B2B procurement is assisted by Web-based catalogs that link buyers and sellers (Baron, Shaw and Bailey, 2000). These Web interactions eliminate many manual and paper-based procurement activities. Baron, et al. note that the Web is replacing EDI for some B2B transactions because of the need for high volumes of transactions to justify the cost of EDI. They categorize information exchanges between buyers and sellers, and each category focuses on ordering and payment processes. Suppliers in their study saw benefit for participating in these electronic interactions and were willing to "trade information to become a member of a restricted set of suppliers."

Lancioni, Smith, and Oliva (2000) identify benefits the Web has brought to supply chains (e.g., cost reduction and service improvement). They observe that the Web is useful for supply chain management in the areas of procurement, transportation scheduling, and customer service. However, the use of the Internet for managing supply chains is relatively new and "there have been few, if any, studies done on the use of the Internet in supply chain management." They studied how firms are using the Web in the operation and management of supply chains. Most of the respondents use the Web for some aspect of supply chain management. Many of the firms in the study use the Web for supplier interactions (e.g., purchasing, negotiating, checking price quotes, and order processing). None of these previous supply chain studies mention prospective suppliers, or supplier diversity programs.

Workplace diversity has been studied, but the issue of supplier diversity receives little mention in the literature. Fine (1996) takes a negative view of diversity as a "tool" for organizational success, and focuses on multi-cultural organizations for a multi-cultural world. Her study does not discuss supply chain or trading partner issues. Wentling and Palma-Rivas (2000) interviewed diversity managers at eight Fortune 500 firms. Their study describes the content of diversity programs and very briefly notes the usage by one firm of "minority vendors and suppliers." However, they do not mention the Web as a communication outlet for supplier diversity efforts and the study does not directly address supplier diversity as an element of corporate diversity programs. *Purchasing* magazine (1998) ran a special section on supplier diversity, which discussed the business case for these types of programs. They note that it is good for business when the supplier base matches the customer base. The special section provides practitioner insights but does not discuss the role of the Web in supplier diversity efforts or describe the content of these programs.

A few studies have examined the role of the Web in supply chain interactions, and a few have looked at diversity programs. Almost no research to date has carefully examined how the Web can be an element of a supplier diversity program. In addition, Web-based supplier diversity efforts have not been described or categorized. This exploratory study is an initial effort to describe the content of Web-based supplier communication and supplier diversity efforts and to develop a categorization scheme for Web sites with this content.

THE STUDY

To gather the data for this study, the researcher visited the public Web sites of each of the firms on the 2000 Fortune 500 list in June of 2000. The list, and the accompanying URLs, is on the Fortune magazine Web site (fortune.com). The researcher developed, tested, and modified a form to inventory the most common Web site content related to both majority supplier communication and supplier diversity by visits to the first 50 sites on the list. The form's content was influenced by these Web site visits, by previous supply chain and diversity studies, and by the researcher's experience studying electronic commerce and electronic supply chain links. The form went through several rounds of modifications during its development. The supplier communication and diversity grid was developed in a similar, iterative fashion, by discovering common patterns of majority supplier communication and supplier diversity content on these Web sites.

The data collection form and the classification grid were used in visits to each Web site of the Fortune 500. The home page and site index of each Web site was scanned for references to suppliers and supplier diversity. When available, the site search engine was used to search for key terms related to the study topics. The search terms used were: "diversity," "supplier or vendor," "minority or women-owned or small business," and "procurement." The most common abbreviation used on these sites for supplier diversity programs was "MWBE" meaning minority and women-owned business enterprises. Most firms in the study included disabled veterans and small or disadvantaged businesses in this general category.

The Web site supplier content identified during the site visits enabled the researcher to categorize each firm onto the supplier communication and diversity grid. The grid has two variables, "supplier diversity" and "communication to suppliers." Supplier diversity may be one aspect of majority supplier communications, but MWBE programs are often presented independently of other supplier issues on a Web site. Other topics that may appear under majority supplier communications include: price and quality expectations, procedures for submitting samples, labor compliance requirements, and instructions for interacting with buying personnel (e.g., gift giving). Web-based supplier diversity efforts were placed into three categories:

- the site describes a formal MWBE program,
- the site notes the importance of supplier diversity, lists a phone number and says "call us," or
- the site provides no mention, or brief mention (e.g., "a diverse supplier base is important"), about supplier diversity but does not give any contact information.

Likewise, majority supplier communications were placed into three categories:

- there are multiple site pages that deal with a variety of supplier issues,

- the supplier content deals with a single topic such as labor compliance or EDI standards, or
- the site provides no public access to supplier information (i.e., there is a secured extranet), or makes no mention of supplier issues.

Table 1 shows the resulting three-by-three supplier communication and diversity grid.

Table 1: Supplier Communication and Diversity Grid

Supplier Diversity

	1.	2.	3.
Describe Formal MWBE Program *Row Total:* **N = 38 (28.4%)**	N = 24 (17.9%)	N = 8 (6.0%)	N = 6 (4.5%)
"Call Us" Notice *Row Total:* **N = 24 (17.9%)**	4. N = 10 (7.5%)	5. N = 7 (5.2%)	6. N = 7 (5.2%)
No/brief mention but no contact information *Row Total:* **N = 72 (53.7%)**	7. N = 18 (13.4%)	8. N = 48 (35.8%)	9. N = 6 (4.5%)
134/495 = 27.1% **Sum N = 134**	No/brief mention; no public access to supplier info. *Column Total:* **N = 52 (38.8%)**	Single Topic (e.g., labor compliance) *Column Total:* **N = 63 (47.0%)**	Site segments covering multiple supplier issues *Column Total:* **N = 19 (14.2%)**

Communication to Suppliers

10. No mention of suppliers or supplier diversity (n= 361, 72.9%)
No Web Site 5/500 = 1%

FINDINGS

Public Web sites are common for these large firms; all but five firms on the 2000 Fortune 500 have a Web site. Although many firms may interact with majority suppliers using extranets or other private networks, the number of firms that use their public Web sites for communicating with suppliers is surprisingly low given the importance of electronic supply chain interactions. Just 134/495 Fortune 500 firms (27.1%) have some form of majority supplier communication or supplier diversity content on their public Web site.

Only 82/495 firms (16.6%) provide technical or other majority supplier content, and only 38/495 firms (7.7%) describe a formal supplier diversity program on their public Web site. Most of the Fortune 500 public Web sites (361/495 - 72.9%) mention neither supplier issues in general, nor supplier diversity specifically. Of the 134 firms that were classified on the supplier communication and diversity grid, 38 (28.4%) describe a formal MWBE program and 19 (14.2%) have site segments that address multiple, majority supplier issues. The number and percentage of firms in each quadrant of the supplier communication and diversity grid are listed in Table 1. A Chi-square test shows that the values across the cells are significantly different (p<.001) than the expected values.

The 38 firms with formal MWBE programs on their public Web sites are in 19 different industries. The 24 firms with "call us" pages in their supplier diversity segment are in 14 industries. There is no clear pattern of interest across industries in using the

Web for supplier diversity given the mixture and number of different industries in each category of the grid.

Majority Supplier Content

Communication to majority suppliers on Fortune 500 public Web sites falls into five categories: procurement, compliance, quality, supplier evaluation, and technology. Procurement issues include on-line bidding, order status, and logistics. Compliance covers labor laws, workplace safety, and environmental issues. Under quality firms mention ISO certification and continuous improvement. Existing suppliers are evaluated by a variety of performance metrics, such as on-time delivery. Technology covers topics such as EDI and electronic payments. Most sites (63/134) mention a single operational topic while a few cover multiple issues (19/134) in the Web site segment dedicated to majority suppliers.

Supplier Diversity Content

Several different content items make up the supplier diversity sections of the Fortune 500 public Web sites that have either "call us" pages or descriptions of formal MWBE programs. The most frequently appearing supplier diversity content items follow (see **Table 2**).

- Contact information (e.g., name, e-mail link, phone number, address) is provided on 35/134 sites (26.1%). Another 25 sites (18.7%) provide contact information without giving a person's name.
- A few sites (21/134 - 15.7%) display a letter from an officer such as the chairman or CEO, which discusses the importance of the firm's supplier diversity efforts.
- Approximately a quarter of the sites (33/134 - 24.6%) give definitions for each category of MWBE business (e.g., small, minority, or women-owned). A commonly used MWBE definition is: "A MWBE is a minority and/or women-owned business enterprise that is at least 51% owned, controlled, and operated by men and women who are African Americans, Hispanic Americans, Asian Americans, Native Americans, or Non-minority women."
- Over a third (50/134 - 37.3%) require the business to be certified by an outside agency (e.g., the National Minority Supplier Development Council) that it is really a minority or women-owned business. A few sites (22/134 - 16.4%) provide links to certifying agencies such as the Small Business Administration.
- Only 40/134 firms (29.9%) provide an on-line application form or a printable form for mailing.
- A number of the firms use the supplier diversity section to mention technical requirements such as bar coding or EDI (26/134 - 19.4%). Others mention financial requirements such as a D&B number and past year's sales (34/134 - 25.4%).
- A few firms list MWBE awards they have received or case studies of their successful MWBE vendors (18/134 - 13.4%).

- Mention of second tier supplier programs is rare (16/134 - 11.9%).

Reasons for Supplier Diversity Initiatives

Several firms (39/134 - 29.1%) stated explicit reasons for their interest in supplier diversity. In general, firms cite both business and humanitarian issues when explaining the development of supplier diversity programs. Their reasons for these programs fall into four broad categories: customers, competitive advantage, communities, and common good. Examples of statements, and the number of firms making each type of statement, are listed below.

- *Customers* (16 firms) - MWBE's are potential customers; enables the firm to be a more compelling place to shop and invest; diverse suppliers help the firm understand/attract diverse customers.
- *Competitive Advantage* (11 firms) - provides competitive advantage; makes good business sense; required for government contractors; supports continuous improvement of products and processes.
- *Communities* (19 firms) - way to invest in/help grow the communities served or operating in; way to insure community growth.
- *Common Good* (7 firms) - way to express concern for the public good; it's the right thing to do; a healthy company and society depend on enabling all to share in the national economic growth; shows a high-performance, value-driven culture.

Table 2: Supplier Diversity Content on Fortune 500 Web Sites (N=134)

Supplier Diversity Content Item	# Sites	% Sites
Certification by outside agency required	50	37.3
On-line application form, or form to print and mail	40	29.9
Contact information: name, address, phone, e-mail	35	26.1
Financial information required (e.g., annual sales)	34	25.4
Definitions for MWBE categories	33	24.6
Technical requirements (e.g., EDI, bar coding)	26	19.4
Contact information *without* a contact name	25	18.7
Links provided to certifying agencies (e.g., SBA)	22	16.4
Letter from officer about diversity program	21	15.7
List MWBE awards or case studies	18	13.4
Second-tier supplier diversity mentioned	16	11.9

DISCUSSION

Most Fortune 500 firms (72.9%) are not actively using their public Web sites to interact with existing, majority suppliers, or as a means of attracting a more diverse supplier base. A few firms are actively moving supplier interactions to the Web, but many are not. The single most common usage of Fortune 500 public Web sites regarding supplier communications (63/134 sites, 47.0%) is for explaining specific requirements such as labor law compliance or for publishing technical specifications (e.g., for EDI). *Publishing* technical or operational information (63 sites) outweighs *promoting* supplier diversity with a formal MWBE program (38 sites). Therefore, concerning supplier information, the public Web sites of large corporations are primarily used as a publishing outlet describing how to transact business with the buying firm.

Firms with descriptions of formal MWBE programs or "call us" segments on their public Web sites are more likely to have no public, majority supplier communication than they are to have single-topic or extensive supplier communication. Specifically, over half (34/62, 54.8%) of the formal or "call us" MWBE programs are on Web sites that have no mention, or no public access, to majority supplier information. Firms that publish supplier diversity material on their public Web site (62 firms) are slightly more inclined to discuss supplier diversity alone (34 firms) than to mention both supplier diversity and suppliers in general (28 firms). However, for the entire group of 134 firms on the supplier communication and diversity grid, more firms publish majority supplier information only on their Web site (54 firms) than publish supplier diversity information alone (34 firms).

Although many of these firms may have active supplier diversity programs, only 7.7% of the Fortune 500 are using their

public Web site to describe their MWBE programs. A few more (4.8%) of the Fortune 500 tell prospective diverse suppliers to "call us." Given the growing access to the Web across the United States the Web seems to be an underutilized resource for growing a diverse base of suppliers. There is no indication in the data that any single industry is actively leading in the development of Web-based supplier diversity programs.

Even for firms with formal, Web-based MWBE programs, there are some glaring omissions in the content of their Web sites. Just over a quarter of the sites (26.1%) list a contact name; another 18.7% have contact information without a name. The lack of contact information presents an "unfriendly" face to prospects. Listing awards and case examples help improve the visitor friendliness of the Web site, but again, these items appear infrequently (13.4%). Something as simple as an on-line application appears less than 30% of the time. Links to certifying agencies could be helpful for non-certified supplier firms, but only 16.4% of the sites with supplier diversity content offer this feature. The percentages of Web sites with each type of supplier diversity content are generally low (see Table 2) suggesting that no consensus has emerged about what should, and should not, be included when discussing supplier diversity on a public Web site. Firms with established processes for dealing with diverse suppliers are just beginning to move those processes to their public Web sites.

A negative view of public, Web-based supplier diversity efforts is that they represent an open invitation for special treatment. The number of firms that specify price, quality, geographic coverage, and financial or technical requirements (e.g., EDI is required) argues against special treatment. Although the percentages of firms that publicize specific requirements are generally low (e.g., 25.4% ask for sales and other financial data), other statements about price, quality and on-time delivery on these Web sites suggest that prospects must compete against other suppliers with established relationships. Web-based supplier diversity programs place the responsibility on the prospect for certification, for follow-up contacts with the buying firm, and for meeting the buyer's requirements for electronic linkages and financial stability.

The stated purposes for developing supplier diversity programs (e.g., new customers, gain competitive advantage) argue against altruistic motives alone. Firms see sound business reasons (e.g., lower operating costs, better understanding their customer's needs) for developing a diverse supplier base. Supplier diversity is one way firms are able to understand and sell to a very diverse set of customers in an increasingly diverse marketplace. However, the low occurrence of Web-based supplier diversity programs contrasts sharply with this imperative for understanding and selling to diverse markets.

CONTRIBUTION

The primary contribution of this study is to identify the content of Web-based majority supplier communication and supplier diversity efforts and then create a categorization scheme for that content. Although firms may actively use private extranets for majority supplier interactions, their public Web sites are generally underutilized for this purpose.

Fortune 500 firms appear to be in the early stages of interacting with majority or MWBE suppliers through public Web sites. Publishing technical or operational specifications on the Web is a relatively safe way to use this medium. A few firms are publishing supplier diversity program materials; fewer still are "transacting" with prospective diverse suppliers by taking on-line applications or accepting e-mail questions. The number of Web-based supplier diversity efforts should increase as firms gain confidence in the Web as a means of communication. Corporate diversity efforts relating to suppliers are a given, but the role of the Web in these efforts is still emerging.

This study faces the same limitations as other Web-based surveys. The content of public Web sites changes frequently and so presents a "moving target" to researchers. The public Web sites of the Fortune 500 are not representative of every firm's Web site, but certainly represent how huge firms, with very large supplier bases, interact with those suppliers using the Web. This study looks from "the outside in" by visiting public Web sites. Follow-up studies should survey and interview supplier diversity managers at these firms to better understand the firm's business objectives regarding the role of the Web in supplier diversity programs.

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