Social Pressures on Organizational Website Adoption

ANDREW J. FLANAGIN
University of California, Santa Barbara

Innovation adoption research has demonstrated that organizational features and perceived benefits of innovations play significant roles in explaining organizational-level decisions to adopt new technologies. Beyond such motivations, however, social pressures operating at the interorganizational level have been proposed to influence the decision to adopt innovations, even without regard to any proven or anticipated benefit from the innovation itself. To empirically determine the influence of organizational features, perceived benefits, and social pressures on organizations' innovation adoption decisions, this study examined the decisions of 288 organizations to adopt Internet websites. Organizational social pressures were found to be the most significant discriminators of adopters and nonadopters, although they were not particularly important in predicting the likelihood of future adoption for those organizations currently without websites. This finding suggests that social pressures are significant in innovation adoption, but that they may have their strongest effect during the early phases of innovation diffusion. Organizational features and perceived benefits were also reasonable discriminators of adopters and nonadopters as well as effective predictors of the likelihood of adoption for nonadopters. To a lesser degree, these factors were also predictive of the stage of adoption for those organizations that have already adopted websites.

Several factors have been suggested to explain why organizations adopt innovations such as Internet websites. Organizational centralization (Dewar & Dutton, 1986; Ettlie, Bridges, & O'Keefe, 1984), formalization (Ettlie et al., 1984; Pierce & Delbecq, 1977), size (Damanpour, 1987; Lai & Guynes, 1997; Moch & Morse, 1977; Swanson, 1994), complexity (Cooper & Zmud, 1990; Tornatzky & Klein, 1982), and the relative advantage of technologies (Robertson & Gatignon, 1986; Tornatzky & Klein, 1982; Utterback, 1974) have all been demonstrated to predict organizations' tendency to adopt innovations. Damanpour (1991)

reviewed 13 major structural features of organizations that affect innovativeness, and Tornatzky and Klein (1982) listed 30 characteristics that have been proposed as determinants of organizational innovation adoption. In spite of this apparent diversity, reviews and meta-analyses of organizational innovation adoption studies suggest that almost all factors proposed to explain adoption can be classified as either (a) characteristics of organizations and their environments or (b) benefits and advantages of the innovation itself (Damanpour, 1988, 1991; Downs & Mohr, 1976; Tornatzky & Klein, 1982).

However, research also suggests that other factors are important in decisions to adopt innovations. For example, "trialability" (the ability of nonadopters to see firsthand the effectiveness of an innovation) and current, reliable information about an innovation are critical in assessing and subsequently choosing to adopt innovations, especially in the early phases of diffusion (Abrahamson & Rosenkopf, 1993; Rogers, 1995). In addition, because the effectiveness of interactive technologies such as websites can depend on a sufficient number of adopters to make them viable, a "critical mass" of users must develop in the absence of optimal benefits (Fulk, Flanagin, Kalman, Monge, & Ryan, 1996; Gurbaxani, 1990; Markus, 1990). In order to achieve this critical mass, many must adopt interactive innovations in the face of low return for their efforts.

Thus, although organizational websites promise legitimate advantages, low trialability and minimal returns accruing to early adopters make adoption problematic. In addition, concerns over ease of access and use, security, and the unproven commercial benefits of websites mean that actual benefits are still not well understood (Bellafante, 1995; Hoffman, Novak, & Chatterjee, 1995). In spite of these limitations, however, many and varied organizations continue to adopt websites.[1] Consequently, organizational characteristics and perceived benefits of the innovation—factors proposed to account in large part for organizational innovation adoption behaviors—may be insufficient to explain organizational adoption behavior, at least in regard to relatively novel, interactive communication and information technologies. This suggests that other factors may be important in organizations' innovation adoption decisions.

In fact, evidence suggests that *social pressures* operating at the interorganizational level are critical determinants of organizational innovation adoption, particularly in the case of relatively new innovations. Ambiguity surrounding rapidly diffusing and largely unproven innovations such as organizational websites, coupled with the fact that high uncertainty inhibits rational organizational decision making (March & Simon, 1958) and increases the social influence of others (Moscovici, 1976), suggests that adoption decisions may be subject to social pressures. As Contractor and Eisenberg (1990) note, adoption decisions
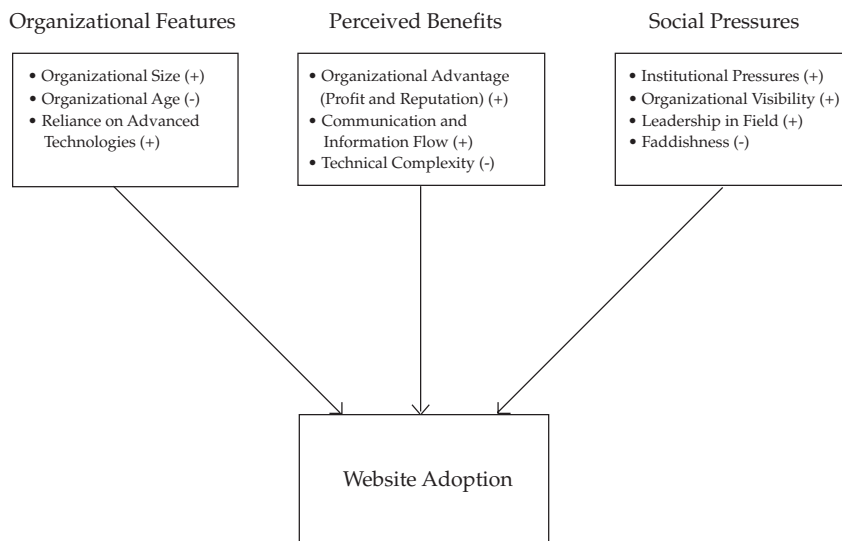
Organizational Features   Perceived Benefits   Social Pressures

Organizational Features	Perceived Benefits	Social Pressures
• Organizational Size (+) • Organizational Age (-) • Reliance on Advanced Technologies (+)	• Organizational Advantage (Profit and Reputation) (+) • Communication and Information Flow (+) • Technical Complexity (-)	• Institutional Pressures (+) • Organizational Visibility (+) • Leadership in Field (+) • Faddishness (-)

Website Adoption

Figure 1: Organizational Website Adoption Research Model

may have more to do with interorganizational isomorphic processes than rational intraorganizational criteria such as efficiency. For instance, the "bandwagon effect" observed in the adoption of facsimile machines by organizations suggests that mimetic and normative processes may have influenced the decision more than a rational cost-benefit analysis. (p. 156)

Accordingly, institutional theory (DiMaggio & Powell, 1983; Scott, 1995; Scott & Christensen, 1995; Scott & Meyer, 1994) proposes that the actions of organizations are deeply influenced by those organizations around them. Normative institutional pressures prompt mimetic action on the part of organizations, suggesting that under conditions of high uncertainty and low information the adoption of innovations by a few organizations might prompt wide-scale adoption overall. Similarly, Abrahamson (1991) suggests that "fads and fashions" can lead to the adoption of inefficient innovations as well as to the nonadoption of efficient ones, and Abrahamson and Rosenkopf (1993) mathematically modeled "bandwagon" pressures and found that innovations "with ambiguous returns can diffuse in a bandwagon manner" (p. 487). Thus, explanations of why organizations adopt websites must consider not only organizational features and perceived benefits of the innovation, but also social factors operating at the interorganizational level. Figure 1 represents the organizational website adoption model developed under this rationale, and developed further in the remainder of this article.

As Tornatzky and Klein (1982) point out, studies of organizational inno-vation adoption should examine multiple explanations of adoption behav-ior in order to assess the power of different forces. Therefore, this study examines the adoption of organizational websites, focusing simultaneously on factors that represent organizational features, perceived benefits, and social pressures. By considering explanations from each of these three gen-eral classes, this research locates the most influential individual factors from among these as well as the relative influence of each broader class of predic-tors. Thus, this study adds to innovation research an important consider-ation of social factors acting at the interorganizational level.

In addition, this research looks beyond the adoption decision alone, considering also the *likelihood* of innovation adoption for current nonadopters and the *stage* of adoption for those organizations that have already adopted websites. In this way, variables discriminating adoption and nonadoption, as well as predictors of future adoption and past stage of adoption, are examined collectively, thereby constructing a thorough picture of organizational innovation adoption behavior. This research thus adds to our understanding of innovation adoption processes at the interorganizational level and, moreover, to a specific understanding of Internet websites, an increasingly important communication and infor-mation technology.

Organizational Features

Organizational features have been demonstrated to explain organiza-tional innovation adoption (Damanpour, 1987, 1991; Lai & Guynes, 1997; Tornatzky & Klein, 1982). In his meta-analysis of innovation adoption research, Damanpour (1991) found that structural characteristics of orga-nizations were stable predictors of innovativeness. Specifically, factors such as organizational specialization, functional differentiation, professionalism, centralization, managerial attitude toward changes, technical knowledge resources, administrative intensity, the existence of slack resources, and in-ternal and external communication predicted organizational innovativeness, irrespective of the specific type of innovation studied.

One of the most thoroughly tested structural predictors of organiza-tional innovation adoption is *organizational size*. Larger organizations have been found consistently to adopt innovations earlier than smaller ones (Baldridge & Burnham, 1975; Dewar & Dutton, 1986; Kimberly & Evanisko, 1981; Lai & Guynes, 1997; Moch, 1976; Moch & Morse, 1977), largely because of the financial advantages enjoyed by larger organiza-tions such as economies of scale and buffers against financial loss. Ac-cording to LaRose and Hoag (1996), "larger organizations should be ear-lier adopters of the Internet than smaller ones, for the simple reason that

they can better afford to do so and are more likely to have necessary technological and personnel resources already in place" (p. 52).

Kimberly and Evanisko (1981) argue that *organizational age* is negatively related to the adoption of innovations, because newer organizations use new technologies as a "strategy for defining a niche," whereas older organizations are already firmly established (p. 707). In addition, to the extent that newer organizations are born into an environment saturated with advanced communication and information technologies, they naturally rely on technologies to achieve a competitive advantage (Porter, 1985). As a result, newer organizations may be more prone to the adoption of innovations, particularly as they complement existing systems and goals.

The adoption of an innovation rarely contradicts existing organizational features. Rather, adoption decisions are typically consistent with the experiences and needs of adopters, complementing rather than contradicting existing values and habits (Rogers, 1995). Accordingly, LaRose and Hoag (1996) found that organizational adoption of Internet technologies was predicted by the previous adoption of clusters of similar innovations and "organizations who process, produce, use or transmit information as their primary activity should more readily adopt advanced information services like the Internet than organizations who are not a central part of the information economy" (p. 52). Thus, organizations complement existing technologies with new innovations.

Similarly, Tornatzky and Klein (1982) and Grover (1993) note the importance of the compatibility of new innovations with existing ones in organizational adoption decisions. Grover (1993) found that a "proactive technological orientation," including factors such as the sophistication of the organization's orientation to technology, an infrastructure compatible with the innovation, and a pro-technology policy, was the strongest predictor of customer-based interorganizational systems adoption. As Cohen and Levinthal (1990) argue, the ability to recognize and exploit new information depends on organizations' level of prior, related experience. Thus, organizations with greater *reliance on advanced technologies* in their day-to-day operations are more likely to adopt advanced technology innovations as well.

Organizational features such as organizational size, age, and reliance on advanced technologies suggest the following hypotheses concerning organizational decisions to adopt innovations. These factors are indicative of the propensity of organizations to adopt or not adopt innovations and, further, can also explain the relative temporal order of adoption (for organizations that have already adopted websites) and the likelihood of future adoption (for organizations that have not already adopted websites).

H1a-c: *Organizational size*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.

H2a-c: *Organizational age*: (a) will negatively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be negatively related to the age of the website; and (c) for those organizations that have not adopted a website, will negatively influence the likelihood of website adoption.

H3a-c: *Reliance on advanced technologies*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.

Perceived Benefits of Innovations

Organizations incur costs with the adoption of any innovation. Innovation adoption can be accompanied by risk, uncertainty, and expenditures of money, time, and effort. To justify these costs, organizations must perceive direct benefits from innovations that make them worthwhile. Confirming this, researchers have consistently discovered strong links between the perceived benefits of innovations and their adoption in organizations (Downs & Mohr, 1976; Tornatzky & Klein, 1982). More specifically, relative advantages such as ease of operation, profit, rate of cost recovery, saving of time and discomfort, and increased reliability have all been found to influence organizational innovation adoption (Tornatzky & Klein, 1982). Such relative *organizational advantages* serve to justify the expenditures and risks incurred in innovation adoption.

With recent developments in the physical communication infrastructure, computer hardware and software, and data exchange protocols and compression technologies, organizations are becoming increasingly interconnected and interdependent (Nohria & Eccles, 1992; Sproull & Kiesler, 1991). This increased connectivity affects direct marketing, communication with customers and clients, and the linking of scattered organizations (Hoffman et al., 1995; LaRose & Hoag, 1996). In this way, the free flow of information is becoming an important consideration in organizational success.

Innovations such as organizational websites can be used to increase information giving to clients and customers, to increase information gathering from clients and customers, and to increase the overall (nondirectional) flow of information between organizations and others.

Such capabilities are all means by which organizations increase their *communication and information flow*. Communication and information flow can be an important predictor of organizational website adoption, because of the capability to increase communication between entities and to enable information sharing beyond organizational boundaries (Badaracco, 1991; Fulk et al., 1996).

However, specific characteristics of innovations can account for differences in organizational adoption decisions. High technical complexity has been found to be negatively related to innovation adoption (Cooper & Zmud, 1990; Grover, 1993). Technical skills or capacity beyond that of the organization can inhibit innovation adoption due to steep learning curves, high uncertainty, and limited organizational resources. Rather than developing expertise with a new innovation, organizations may instead choose to adopt innovations that are consistent with those with which they are already familiar (Grover, 1993; LaRose & Hoag, 1996). Thus, the *technical complexity* of innovations can inhibit adoption.

The preceding suggests the following hypotheses concerning perceived benefits of websites and organizational innovation adoption:

> H4a-c: *Organizational advantages*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.
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> H5a-c: *Communication and information flow*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.
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> H6a-c: *Technical complexity*: (a) will negatively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be negatively related to the age of the website; and (c) for those organizations that have not adopted a website, will negatively influence the likelihood of website adoption.

Interorganizational Social Pressures

Although the relative advantage of innovations is clearly an important element of the adoption decision, it has not always been proven to be a significant predictor of adoption (Grover, 1993). In a study of organizational decisions to adopt information technologies, King and Grover (1991) found that over half of the senior information system executives interviewed reported either no or irregular planning processes for the strategic use of information resources, demonstrating that organizational "analy-

ses dealing with information technology . . . have not yet become a routine and regular part of the planning process" (p. 300). In the absence of such formal planning and evaluative processes, organizations are apt to make adoption decisions based on less formal and explicit criteria.

Accordingly, several researchers suggest that assessments of innovation efficiency and the level of ambiguity surrounding these assessments have important implications for innovation adoption. For example, as mentioned earlier, "bandwagon pressures" can influence the adoption of inefficient innovations as well as the nonadoption of efficient ones (Abrahamson & Rosenkopf, 1993). So-called fashion perspectives of innovation adoption similarly reject the dominant notions that organizations are relatively certain in their assessments of innovation efficiency and select innovations freely and independently (Abrahamson, 1991). By contrast, "social approval" has been cited as an important consideration in innovation adoption (Tornatzky & Klein, 1982), and organizations often look for adoption of an innovation by other organizations as a means by which to validate their own adoption (Tolbert & Zucker, 1983). In this way, social pressures operating at the interorganizational level can diffuse innovations regardless of their efficiency and returns.

These social pressures are more pronounced under conditions of high ambiguity (Abrahamson & Rosenkopf, 1993; DiMaggio & Powell, 1983; O'Neill, Pouder, & Buchholtz, 1998), such as when new technologies are introduced and little reliable information is available. Under such circumstances, *institutional pressures* (DiMaggio & Powell, 1983; Scott, 1995) are especially likely to be influential. Institutional theory proposes that organizations are influenced by one anothers' actions, patterning their own behavior after that of other organizations. Tolbert and Zucker (1983) found strong support for the notion that organizational adoption of policies or innovations is influenced by the extent to which they are institutionalized, either by policy or gradual legitimation among related organizations. Similarly, Galaskiewicz and Wasserman (1989) found that extraorganizational networks guided organizational decisions through mimetic institutional forces.

Organizations that perceive themselves to have high *visibility* within an organizational sector or to be *leaders* in their field might be especially prone to the effects of social pressures. Flanagin, Monge, and Fulk (in press) found that organizations that were critical in helping to form an interorganizational federation were sought for advice and were considered to possess knowledge well beyond the domain of their expertise, indicating that expectations of leader organizations differ from others. Such pressures can prompt organizations to gain and maintain leadership among their peers, much like "first-mover" organizations that adopt innovations early in order to gain a competitive advantage (Porter, 1985).

Perceived high visibility or leadership can add further pressure to organizations to remain current, adopting the latest innovations and ideas. Similarly, leadership pressures can persuade organizations that they must lead rather than follow, encouraging early versus later adoption of innovations.

However, innovations characterized by highly enthusiastic support and relatively low availability of reliable information run the risk of being perceived as ephemeral or faddish. In such cases, organizations might react negatively to innovations, perceiving them merely to be stylish and lacking substance or proven benefit to the organization. Thus, organizations may remain cautious, not adopting innovations because of their unproven nature and the attendant cost for an innovation that they believe might bring only limited, temporary, or unproven benefits. Collectively, these interorganizational-level social pressures suggest the following hypotheses:

> H7a-c: *Institutional pressure*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.
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> H8a-c: *Organizational visibility*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.
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> H9a-c: Degree of *perceived leadership within organizational field*: (a) will positively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be positively related to the age of the website; and (c) for those organizations that have not adopted a website, will positively influence the likelihood of website adoption.
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> H10a-c: *Perceived faddishness*: (a) will negatively influence an organization's decision to adopt a website; (b) for those organizations that have adopted a website, will be negatively related to the age of the website; and (c) for those organizations that have not adopted a website, will negatively influence the likelihood of website adoption.

Finally, based on the overall importance of social pressures, and, in order to explore the relative contribution of each of the three classes of predictive variables, Hypothesis 11 and Research Question 1 are proposed:

> H11a-b: Social pressures will explain unique variance in (a) website age for adopters and (b) likelihood of website adoption for nonadopters, beyond that accounted for by organizational features and perceived benefits.
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> RQ1: What is the relative importance of organizational features, perceived benefits, and social pressures on organizational website adoption decisions?

METHOD

Sample and Procedure

I surveyed organizations belonging to the regional chamber of commerce in a west coast city in the United States (population approximately 90,000). The survey was administered to all 1,569 chamber members as an insert in the chamber's monthly business magazine. Following researchers who suggest that top-level executives are well qualified to assess organizational level adoption decisions (Grover, 1993; Hage, 1980; Tornatzky & Klein, 1982), surveys were directed to executive level representatives in each organization. The initial response rate was 80 organizations (5%). I resent the survey in a direct mailing with an incentive given to those who responded, which yielded an additional 208 surveys.[2] In all, I received 288 completed surveys, producing an overall response rate of 18%.

Measures

Organizational size and organizational age were self-reported and measured by the number of employees and the number of months from the founding of the organization, respectively. Organizations were categorized into an *organizational sector* based on the United States Office of Management and Budget's Standard Industrial Classification (SIC) codes. *Existence of website* was also self-reported. As a follow-up question, website adopters were asked the date on which the organization had first established its website. The number of months since adoption yielded *website age*. For nonadopters, the follow-up question, "To what extent are you currently *considering* establishing a website for your organization?" (in which 1 = *we have no plans to establish a website* to 7 = *we are definitely going to establish a website soon*) provided the measure of the likelihood of website adoption. Both adopters and nonadopters were also asked about their reliance on advanced technology by the question, "How would you characterize the degree to which your business relies on advanced communication and information technology in its day-to-day operations?" (in which 1 = *does not rely at all on advanced technology* to 7 = *relies extremely heavily on advanced technology*). Leadership in field was assessed by asking the extent to which organizations, relative to their direct competitors, considered themselves to be a leader in their particular field (in which 1 = *we are not a leader in our field* to 7 = *we are the clear leader in our field*).[3] All remaining measures were composed of multiple items measured on a 7-point Likert scale (ranging from 1 = *strongly disagree* to 7 = *strongly agree*). These multiple item measures were subjected to a principal com-

ponents factor analysis, using varimax rotation, in order to assess the underlying concepts (see DeVellis, 1991; Gorsuch, 1983). Multiple item measures generally loaded on single factors; where they did not, items were either collapsed into single variables or discarded, as dictated by the factor analysis and as noted below. Cronbach's alpha was computed on the resultant factors in order to assess reliabilities, which were found to be quite good overall (range = .83 – .95).

Institutional pressures, organizational visibility, technical complexity, and technological faddishness were all composed of multiple items that loaded on single factors. Intended as separate perceived benefit variables, organizational profit and enhancement of organizational reputation items were found to load together and were thus collapsed into the single variable, *organizational advantage*. Several items intended to measure the degree to which websites are perceived to increase information giving to clients and customers, to increase information gathering from clients and customers, and to increase the overall (nondirectional) flow of information between organizations and others were not found to be distinct from one another, loading together. As a result, they were collapsed into one variable, communication and information flow. Overall, three items that conflicted with the face validity of the derived variable were discarded. Appendix A provides a summary of variable operationalizations, including specific items for each variable, the resultant alpha reliabilities, and the proportion of variance explained by each factor from the single factor analysis performed on the 33 items.

Analyses

To identify the variables that are significant predictors of website adoption (Hypotheses 1a–10a), a discriminant function analysis was conducted. Classification results were calculated to demonstrate the predictive utility of the overall function. In addition, comparison of classification results across the three classes of factors proposed to influence website adoption (organizational features, perceived benefits, and social pressures) helps to assess the relative effectiveness of each class in predicting adoption and nonadoption, as suggested in this study's research question.

Multiple regression analyses were used to determine factors predicting the age of the website for those organizations that had already adopted a site (Hypotheses 1b–10b), to determine variables that predict the likelihood of website adoption for those organizations that have not yet adopted websites (Hypotheses 1c–10c), and to determine whether social pressure factors explain unique variance in these dependent variables (Hypothesis 11). A step-wise procedure was used to locate significant predictors from among the independent variables of this study, as specified in Hy-

TABLE 1
Means, Standard Deviations, R^2 Values When Regressing Each Independent Variable on all Other Independent Variables, and Zero-Order Correlations Among Variables

Variable	$\overline{X}$	SD	R^2	1	2	3	4	5	6	7	8	9	10	11
1. Organizational size	40.17	167.16	.19											
2. Organizational age	26.52	27.47	.16	.27***										
3. Website age	18.95	12.38	—	.11	.06									
4. Likelihood of website adoption	4.40	2.30	—	.24**	.10	—								
5. Reliance on advanced technology	4.98	1.81	.29	.14*	.24***	.20*	.42***							
6. Leadership in field	5.66	1.58	.17	.12	.25***	.05	.13	.43***						
7. Institutional pressures	5.14	1.61	.39	.09	.03	.19*	.44***	.36***	.08					
8. Organizational visibility	5.39	1.24	.31	.12	.15*	.17*	.13	.35***	.16**	.47***				
9. Technical complexity	2.72	1.42	.13	-.15*	-.01	-.17*	-.21*	-.24***	-.11	-.23***	-.27***			
10. Technological faddishness	5.29	1.38	.03	.06	.04	.18	.01	.02	-.05	.10	.13*	-.02		
11. Organizational advantage	4.98	1.34	.62	.02	-.05	.06	.64***	.29***	.07	.47***	.30***	-.24***	.06	
12. Communication and information flow	5.48	1.25	.63	.09	.06	-.01	.64***	.30***	.13*	.47***	.29***	-.26***	.02	.77***

NOTE: Organizational age is in years; website age is in months; website age is reported only for those organizations with a website; likelihood of website adoption is reported only for those organizations without a website; correlations reported are for variables prior to transformations.
$N = 288$.
*$p < .05$, **$p < .01$, ***$p < .001$.

TABLE 2
Standard Industrial Classification Comparisons: Population, Sample,
and National Organizational Demographics

SIC Category	Chamber population	Sample	National demographic[a]
Agriculture, forestry, and fisheries	.19%	0.00%	3.60%
Mineral industries	.39%	.35%	.86%
Construction industries	3.18%	2.08%	11.31%
Manufacturing	.77%	1.39%	3.92%
Transportation, communications, and utilities	4.99%	5.90%	4.37%
Wholesale trade	1.10%	1.04%	3.42%
Retail trade	23.07%	17.71%	15.87%
Finance, insurance, and real estate	20.41%	19.79%	13.02%
Service industries	41.54%	45.49%	43.53%
Public administration	4.34%	5.55%	n/a

[a] Source: U.S. Department of Commerce, *Statistical Abstract of the United States,* 1997, p. 537.

potheses 1b-c–10b-c. Hierarchical regression, based on blocks of variables corresponding to the three classes of predictors proposed in the research model, was used to test Hypothesis 11.

RESULTS

Respondent Characteristics

Organizations in the sample were established as early as 1855 and as recently as 1997. The mean organizational age was 26.52 years ($SD = 27.47$, $Mdn = 17.0$), equivalent to a founding date of 1971. Mean number of employees was 40.17 ($SD = 167.16$, $Mdn = 8.0$), with a range of 1–2,200. Omitting two atypically large organizations from the sample, the mean number of employees drops to 26.96 ($SD = 54.84$). Overall, 56% of the organizations ($N = 161$) currently have a website, whereas the remaining 44% do not ($N = 127$). Zero-order correlations and descriptive statistics for all of the variables in this study are reported in Table 1.

Organizations responding to the survey tended to represent the industry sector identification of the overall chamber membership and of the demographics of United States organizations more generally, as illustrated in Table 2. Compared across SIC codes, the sample organizations represent both the wider chamber membership and demographics of United States organizations quite well in view of the local sample. Although sample organizations underrepresent construction industries and slightly

TABLE 3
Discriminant Function Analysis of Organizational Website Adoption

Variable	Step entered	Wilks's lambda	Correlation between discriminant function & discriminating variable
Institutional pressure	1	.792 *	.797
Reliance on advanced technology	2	.743 *	.619
Organizational advantage	3	.727 *	.606
Leadership in field	4	.708 *	.417
Communication and information flow	—	—-	.560
Organizational visibility	—	—-	.425

NOTE: Overall effectiveness of the discriminant function: Wilks's lambda = .708, canonical correlation = .54, χ^2 (4, N = 263) = 82.87, p < .001.
*p < .001.

Classification Results

		Predicted group	
		Have website	Do not have website
Actual group	Have website	118 79.7%	30 20.3%
	Do not have website	40 34.8%	75 65.2%

NOTE: 73.4% of original grouped cases correctly classified.

overrepresent finance, insurance, and real estate organizations, the remaining cross-sample/national sectors are within 5% of one another, suggesting that results from analyses of this sample's data are relatively representative of the types of organizations in the United States.[4]

Website Adoption

Table 3 summarizes the results of the discriminant function analysis used to determine variables that meaningfully discriminate between adopter and nonadopter organizations. The overall Wilks's lambda for the function was .708, χ^2 (4, N = 263) = 82.87, p < .001, marking a significant discriminant function. The squared canonical correlation ($.54^2$) indicates that this discriminant function explained 29% of the variance. Four variables significantly contributed to the ability to discriminate between

adopting and nonadopting organizations: institutional pressures, reliance on advanced technology, organizational advantage, and leadership in the field. Increases in each of these typically corresponds to adopters and contributes to the ability to discriminate between adopters and nonadopters of organizational websites. Thus, Hypotheses 3a, 4a, 7a, and 9a are supported.

Correlations between discriminating variables and standardized canonical discriminant functions are a more stable indicator of the predictive capacity of variables, specifying the degree to which indicators are related to the discriminant function (Hair, Anderson, & Tatham, 1987). These correlations are reported in the final column in Table 3. Although not in the discriminant function, the variables communication and information flow and organizational visibility both are highly correlated with the discriminant function, ranking ahead of the final variable in the discriminant function, leadership in field. Communication and information flow and organizational visibility are thus valuable for discriminating organizational website adopters from nonadopters. Therefore, there is partial support for Hypotheses 5a and 8a. Overall, of the variables determined through the discriminant function analyses to meaningfully discriminate adopters from nonadopters, three are social pressure factors, two are perceived benefits factors, and the remaining variable is an organizational feature.

Although the overall discriminant function may be significant, its effectiveness as a predictive model is assessed by a classification table that determines the percentage of cases correctly classified as adopters and nonadopters. Classification tables indicate the percentage of overall cases correctly classified, the percentage of nonadopters correctly classified, and the percentage of adopters correctly classified (see Table 3). In order to establish a standard against which to measure these percentages, Morrison's (1969) proportional chance criterion is used:

$$C = \alpha^2 + (1 - \alpha)^2$$

in which α is the proportion of organizations in the first group and $1 - \alpha$ is the proportion of organizations in the second group. In this study, α is equal to .56 and $C = 50.7\%$. As suggested by Hair et al. (1987), a good classification percentage is greater than 25% higher than that obtainable by chance. Thus, in view of the chance expectancy of 50.7%, a classification criterion of 63.38% was used to which to compare results. The classification rate of 73.4% found in this study exceeds this criterion, demonstrating a good predictive model.

Further comparison of classification results across the three classes of factors proposed to influence website adoption (organizational features,

TABLE 4
Discriminant Function Analysis of Organizational Website Adoption:
Classification Results Compared Across Three Classes of Predictive Factors

Classification results

		Predicted group	
		Have website	Do not have website
	Have website		
	Organizational features	125	35
		78.1%	21.9%
	Perceived benefits	122	31
		79.7%	20.3%
	Social pressures	116	36
		76.3%	23.7%
Actual group			
	Do not have website		
	Organizational features	69	59
		53.9%	46.1%
	Perceived benefits	57	62
		47.9%	52.1%
	Social pressures	39	79
		33.1%	66.9%

NOTE: *N* = 270 to 288.
63.9% of cases were correctly classified by organizational features.
67.6% of cases were correctly classified by perceived benefits.
72.2% of cases were correctly classified by social pressures.

perceived benefits, and social pressures) helps to assess the relative effectiveness of each class in predicting adoption and nonadoption. Table 4 summarizes these findings and demonstrates that, although all three classes of factors exceed the overall 63.38% classification criterion, none matches the entire discriminant model's rate of 73.4%. Thus, the best predictor of adoption is the model including all three classes of variables together, rather than any one class of factors considered separately.

Beyond this, differences emerge in the classificatory facility of the three groups of variables. Social pressures rated best overall (72.2%) as compared to perceived benefits (67.6%) and organizational characteristics (63.9%). This is due largely to the ability of social pressures to correctly classify nonadopters (66.9%), where both organizational features and perceived benefits did so only about as well as by chance (46.1% and 52.1%, respectively). Thus, although all three classes acceptably classify adopters and nonadopters overall, social pressures best classify organizations without websites as nonadopters.

TABLE 5
Regression Analysis With Website Age as Dependent Variable
(for Those Organizations That Have Adopted Websites)

Variables	β	F change	R^2	R^2 change
Reliance on advanced technology	.196*	(5.52)	.040	–
Innovation faddishness	.176*	4.40*	.071	.031

NOTE: F (2, 132) = 5.03, $p < .01$.
*$p < .05$.

Website Age for Adopters

As illustrated in Table 5, two variables explained the age of organizations' websites, for those that had already established one (F [2, 132]= 5.03, $R^2 = .071$, $p < .01$).[5] Reliance on advanced technology, an organizational feature, and innovation faddishness, a social pressure variable, were both positively related to the age of organizations' websites. Together, these variables explained 7% of the variance in the age of website adoption. These findings support Hypothesis 3b, but, because technical faddishness was positively related to organizations' website age, do not support Hypothesis 10b that proposed that website age and technical faddishness are negatively related. Thus, although organizations that rely heavily on advanced technologies did adopt websites earlier, organizations that adopted sites earlier also find websites to be faddish, in contrast to the hypothesized relationship.

Likelihood of Website Adoption for Nonadopters

Hypotheses 1c–10c propose that organizational features, perceived benefits, and social pressure variables are related to the likelihood that organizations will adopt a website if they have not already done so. As shown in Table 6, six variables significantly predict the likelihood of website adoption for those organizations that have not yet adopted sites (F [6, 93] = 23.43, $R^2 = .602$, $p < .0001$). Communication and information flow, reliance on advanced technology, organizational advantage, organizational size, organizational visibility, and institutional pressures were all significant predictors of the likelihood of website adoption. Overall, these variables explained 60% of the variance in likelihood of adoption.

Inspection of the beta weights and the correlation matrix indicates the existence of a suppressor variable influencing these results. Specifically,

TABLE 6
Regression Analysis With Likelihood of Adoption as Dependent Variable
(for Those Organizations That Have Not Adopted Websites)

Variables	β	F change	R^2	R^2 change
Communication and information flow	.284**	(68.60)***	.412	–
Reliance on advanced technology	.202**	10.69***	.470	.058
Organizational advantage	.350***	8.51**	.513	.043
Organizational size	-.236***	7.75**	.550	.037
Organizational visibility	-.257***	7.58**	.584	.034
Institutional pressures	.171*	4.26*	.602	.018

NOTE: Although the beta sign is negative for organizational size, the relationship is positive, because of the transformation of that variable.
$F (6, 93) = 23.43$, $p < .0001$.
*$p < .05$, **$p < .01$, ***$p < .001$.

organizational visibility's negative beta weight, coupled with a positive correlation with the dependent variable, indicates the presence of at least one suppressor variable (Cohen & Cohen, 1975; Tabachnick & Fidell, 1989). Subsequent regression analyses were performed to locate the suppressor variable. It was determined that reliance on advanced technology was suppressing a portion of the variance in organizational visibility that is irrelevant to the likelihood of website adoption. Because reliance on advanced technology enhanced the importance of organizational visibility by virtue of its suppression of irrelevant variance, the effects of organizational visibility were overestimated. Indeed, with the removal of reliance on advanced technology from the equation, organizational visibility was no longer a significant predictor of the likelihood of website adoption, calling into question organizational visibility's importance.

Thus, Hypotheses 1c, 3c, 4c, 5c, and 7c are supported. The perceived benefits of increased communication and information flow and organizational advantage (in the form of greater profits and enhanced reputation) were found to significantly predict the degree to which organizations are considering establishing a website. In addition, organizational features predicted future adoption. Larger organizations and those that rely heavily on advanced communication and information technologies in their day-to-day operations were more likely to report that they would establish a website soon. Finally, only one social pressure factor (institutional pressures) meaningfully influences organizations' likelihood of website adoption (as already explained, the effect of organizational visibility was a function of a suppressor relation).

TABLE 7
Regression Analyses With (a) Website Age and (b) Likelihood of Adoption
as Dependent Variables, by Blocks of Predictive Variable Classes

Variable block	F change	R^2	R^2 change
Dependent variable: website age			
Organizational features	(2.11)	.046	–
Perceived benefits	1.51	.079	.033
Social pressures	1.73	.127	.048
Dependent variable: likelihood of website adoption			
Organizational features	(8.64)**	.213	–
Perceived benefits	23.86**	.555	.342
Social pressures	3.58*	.617	.062

NOTE: $F (10, 124) = 1.81$; *ns* with website age as dependent variable.
$F (10, 89) = 14.32$, $p < .0001$ with likelihood of website adoption as dependent variable.
*$p < .01$, **$p \leq .001$.

Influence of Social Pressures

Table 7 illustrates that, for website adopters, the blocks of variables based on the predictive classes of factors shown in Figure 1 fail to significantly predict website age. Thus, Hypothesis 11a is not supported. For nonadopters, social pressures result in a significant *F* change, and account for an additional 6% of the variance in the likelihood of website adoption, after the effects of organizational features and perceived benefits have been taken into account. Thus, Hypothesis 11b is supported.

DISCUSSION

This study examined factors influencing the adoption of organizational websites, focusing on three general classes of predictive variables. Organizational characteristics and the perceived benefits of the innovation have been demonstrated in past research to influence innovation adoption behaviors. However, particularly with recent innovations about which there exists little reliable information, it was hypothesized that social pressures operating at the interorganizational level also play a strong role in organizations' innovation adoption decisions. In addition, this study moved beyond simply discriminating adopters from nonadopters by examining the likelihood of innovation adoption (for nonadopters) and the stage of adoption (for adopters). In this way, a more complete portrait of the factors important in organizational innovation adoption was constructed. Moreover, the specific innovation under study—organizational websites—

constitutes an important development in the contemporary organizational landscape. Understanding the use of this technology adds to knowledge about the communication and information strategies and capabilities of contemporary organizations.

Social pressures at the interorganizational level were found to be critical in discriminating adopters of websites from nonadopters. Indeed, the single most important factor in separating adopters and nonadopters was institutional pressure: If organizations believed that other organizations in similar businesses or fields had a website, they were likely to have adopted one themselves. Of the six factors that served to discriminate adopters from nonadopters, half were social pressure variables. Beyond institutional pressures, other significant social pressures were perceived leadership in the field and organizational visibility, demonstrating that organizations are not only influenced by direct comparison to others but also by their self-perceptions. In addition, interorganizational social pressures were found to explain unique variance in the likelihood of website adoption, beyond that accounted for by organizational features and perceived benefits of innovations. Thus, consistent with past research, organizational features and the direct consideration of the benefits of innovations contribute to adoption decisions. In addition, this study extends past research by providing evidence that organizations are also subject to highly *social* considerations to a greater extent than previously believed or demonstrated.

It is important to note, however, that the best overall model for classifying adopters and nonadopters is one that considers all three classes of factors together. The discriminant function containing organizational features, perceived benefits, and social pressures was better than models that considered these sets of factors separately. This finding further supports the notion that, although social pressures are important in modeling and predicting organizational innovation adoption, they do not substitute for other explanations. Instead, the value of considering social pressures is most effective in conjunction with other forces (Tornatzky & Klein, 1982).

Considering only those organizations that already have websites, the stage at which organizations adopt the innovation is predicted by the degree to which organizations rely on advanced technologies. Thus, organizations that operate within an environment in which they rely on advanced technologies in their day-to-day operations are more likely to have adopted websites earlier rather than later. In addition, organizations perceiving websites as faddish were also more likely to have established a website early on. This may be an indication that faddishness does not carry a negative connotation, but is instead rather desirable, viewed perhaps as avant-garde and cutting edge rather than trendy and short lived.[6]

The likelihood of innovation adoption (for current nonadopters) was predicted by two perceived benefits factors, two structural factors, and a social pressure factor. Communication and information flow, reliance on advanced technology, organizational advantage, organizational size, and institutional pressures all predict the extent to which organizations are considering adopting websites. Organizations that believe that they stand to benefit in terms of increased communication and information flow with others and through enhanced profit and reputation (organizational advantage) are more likely to adopt websites in the near future. In addition, larger organizations and those that rely on advanced technologies in their day-to-day operations also are more likely to adopt websites soon. To a lesser extent, institutional pressures also influence organizations' future adoption of websites. Overall, these findings confirm already strong evidence on the importance of organizational features and perceived benefits in organizational innovation adoption decisions.

Collectively, the results point to an important finding concerning social pressures. Although social pressure variables are quite strong at classifying website adopters and nonadopters, they are not very important in predicting the likelihood of innovation adoption for current nonadopters, suggesting that the effects of social pressures may be phasic. Specifically, although the results indicate that organizations can be accurately classified as adopters and nonadopters based on social pressure factors, it is the structural features of the organization and perceived benefits of the technology that best predict future adoption (and, to a lesser extent, adoption stage). In effect, organizations in this sample that are subject to social pressures may have already been affected by them. Remaining organizations rely largely on other criteria (organizational features and perceived benefits) in arriving at an adoption decision. In essence, there seems to be a point in the diffusion process where interorganizational social pressures matter most and a subsequent point at which organizations rely more on organizational characteristics and an assessment of benefits to make adoption decisions. After this point, organizations tend either not to feel social pressures or succumb to them. Overall, this suggests a model of organizational innovation adoption in which organizational features and perceived benefits are relatively enduring, but where social pressures are pronounced but localized to certain portions of the diffusion cycle.[7]

Research on innovation adoption may disregard important innovation adoption processes by focusing on factors that discriminate between adopters and nonadopters without examining data on the likelihood and stage of adoption as well. Of course, this issue also illustrates a limitation of the current study, which because of cross-sectional data collection, is

not sufficient to locate such forces explicitly. Thus, the current study is best described as variance research rather than process research (Mohr, 1978; Rogers, 1995). As such, it is not adequate for probing the innovation-decision process or the time-ordering among factors. Longitudinal research on innovation adoption is necessary to track the relative importance of different variables and to determine the point at which different factors exert the most influence.

This limitation also suggests some alternative interpretations of the results from this study. For example, many of the variables proposed to predict adoption, intent to adopt, or stage of adoption could be viewed as results of adoption instead. In other words, are the factors that are proposed to prompt website adoption justification for adoption behaviors or rationalization of them? For example, the pursuit or realization of organizational advantages can lead to or result from website adoption.

Although further research is necessary to test this question directly, evidence suggests that the causal ordering proposed here—that the organizational features, perceived benefits, and social pressures proposed lead to adoption behaviors—is reasonable. Because many of the proposed commercial benefits of website adoption are not yet widely realized (Bellafante, 1995; Hoffman et al., 1995), chances are that such benefits do not retrospectively justify website adoption at this point in time. In addition, social pressure factors appear to be less prone to such retrospective rationalization of website adoption. Finally, existing research provides support for the causality proposed here, across varied innovations and multiple levels of analysis (Abrahamson, 1991; Abrahamson & Rosenkopf, 1993; Rogers, 1995; Tornatzky & Klein, 1982).

Conclusion

The results of this study show that, along with factors from past innovation research, interorganizational social pressures are influential in decisions to adopt innovations. The data offer empirical support to theories and models that suggest that organizations' actions are influenced by institutional pressures (DiMaggio & Powell, 1983; Scott, 1995), interorganizational "fashions" (Abrahamson, 1991), and "bandwagon" pressures (Abrahamson & Rosenkopf, 1993). This consideration of social pressures offers new direction to extant innovation research by illustrating that, beyond organizational features and "rational" considerations of benefits, organizational expectations and perceptions directly influence organizational innovation adoption. The inclusion of social pressures rounds out an understanding of the complex decisions that organizations make when faced with each new innovation.

In addition, this study suggests that models of innovation adoption should attempt to locate the specific stage or stages at which social pressures are most pronounced. The data from this study suggest that such pressures might be most influential relatively early in the diffusion process, but researchers need to study website adoption by stage in the innovation-decision process in order to locate these effects accurately (see Rogers, 1995). Importantly, as found in this study, such research should consider all potential classes of influences simultaneously, because the best predictive models incorporate various influences (Tornatzky & Klein, 1982).

Finally, this study has both the benefit and liability of examining a relatively new technology. Organizational websites are currently used for providing information to customers and clients, for direct sales, and for steering web users to other, relevant information (Donnelly, 1996; Hoffman et al., 1995). Such increases in connectivity (Fulk et al., 1996) and knowledge links (Badaracco, 1991) point to the importance of understanding organizational website usage. However, these nascent technologies will continue to change, perhaps evolving dramatically and rendering any current conceptualization problematic. Thus, although this study informs understanding of this particular technology, its main contribution is its addition to knowledge about the complex processes involved in organizational innovation adoption more generally.

APPENDIX A

Variable Operationalization Summary (Following Principal Components Factor Analysis With Varimax Rotation and Deletion of Items With Low Reliability)

Variable	Items	Alpha	Proportion of variance explained
Organizational advantage	Having a website makes [would make] our company more profitable	.94	16%
	Having a website makes [would make] more money for our company		
	Having a website increases [would increase] our sales		
	Having a website brings [would bring] our company more business		
	Having a website helps [would help] this organization to be held in high regard in our field		
	Having a website makes [would make] this company more highly regarded		
	Having a website enhances [would enhance] this company's reputation		
Communication and information flow	Having a website enables [would enable] clients or customers to provide us with information	.95	15%
	Having a website allows [would allow] customers to give us information easily		
	Having a website enables [would enable] our customers to communicate more with our company		
	Having a website increases [would increase] the amount of information customers are able to give to us		
	Having a website helps [would help] this company to communicate more with our customers		
	Having a website increases [would increase] the amount of communication between our company and customers		

APPENDIX A Continued

Variable	Items	Alpha	Proportion of variance explained
Institutional pressure	Typically, organizations in our business have a website Organizations in the same field as our company have their own website Organizations in the same business as ours typically have websites Organizations in our business have websites these days Organizations in my area of business typically don't have a website* Normally, companies that do what we do don't have websites*	.94	14%
Organizational visibility	Within our field, the actions of companies are highly visible to each another Within our business sector, organizations notice one another's actions Organizations in this field are highly visible to each other Within our business area, the actions of companies are highly noticeable to each other Our company is aware of the actions of other companies in our field	.90	10%
Technical complexity	I am knowledgeable about Internet/website technology* I don't know how Internet/website technology works I understand how the Internet/websites work* I understand the technology required for website formation and usage*	.83	8%
Faddishness	It is fashionable for businesses to have a website Right now it is "stylish" for companies to have a website Right now businesses are going through a website "craze"	.83	7%

NOTE: Items marked with an asterisk are reverse-coded.

NOTES

1. At approximately the time of this study (early 1998) there were about 87 million users of the Internet/World Wide Web (CommerceNet Research Center, 1998) in 171 countries (Zakon, 1998). Top-level domain names help to identify the nature of the entities that have websites. Of the total domains registered worldwide, 61% use the "com" identifier (Domainstats, 1999), signifying that they are used by commercial entities or organizations (organizations may also select the "org" top-level domain, thus potentially underestimating this figure).

2. Analyses revealed no substantial differences between these two samples. Feedback from respondents indicated that the first-wave survey, included as an insert in the monthly chamber of commerce magazine, was simply not noticed by several respondents.

3. Although multiple items would have been ideal for the measurement of some of these variables (e.g., leadership in field), single-item measures were gathered in the initial data collection and, overall, appear satisfactory.

4. Overall, it appears reasonably valid to generalize from this sample. In spite of a somewhat low response rate of 18%, organizations in the sample are fairly representative of the local population and national demographics more generally, as already mentioned (see Table 2). In addition, surveys were completed by those well qualified to assess each organization's characteristics and website usage. Few surveys were completed by those in lower hierarchical positions; only 27 respondents (10%) represented this level (e.g., administrative assistants, salespeople, realtors, and brokers). Seventy-three respondents (25%) were from middle- to upper-management positions, including managers, general managers, MIS managers, and branch managers. The majority of respondents ($n = 188$, or 65%) were top-level executives, including CEOs, directors, executive directors, owners, presidents, and vice presidents. Thus, of the entire sample, 90% of respondents came from management and executive levels. In addition, the nature of the incentive offered would not seem to solicit responses from organizations with any particular emphasis. However, even though generalization appears reasonable, caution should be exercised when generalizing from the nonrandom sample presented here.

5. Assessment of the data for adherence to the assumptions of multiple regression analysis revealed some violations. Specifically, inspection of the histogram of the studentized residuals and the normal probability plot showed minor non-normality of residuals. Similarly, plots of predicted values of the dependent variable against the residuals revealed moderate nonlinearity and heteroscedasticity. These effects were more pronounced for analyses with likelihood of website adoption as the dependent measure than for analyses with website age as the dependent variable.

In order to partially address these violations, transformations were performed on three variables from this study: Organizational size was transformed by taking its inverse, organizational age underwent a logarithmic transformation, and leadership in the field was transformed by reflection and inversion. These transformations resulted in skewness and kurtosis measures much closer to 0, and the residual plots exhibited patterns much more appropriate for regression analyses. However, minor violations were still present, but, as Tabachnick & Fidell (1989) note, slight violations of linearity and homoscedasticity weaken but do not invalidate regression analyses.

In addition, the variables in this study exhibit a moderate degree of multicollinearity among the independent measures. A high degree of multicollinearity is problematic because of large variances in slope estimates that result in large standard errors (and thus less precise estimated coefficients). High bivariate correlations (typically around .80, depending on sample size) are suggestive of multicollinearity, but are not an accurate indicator, because of potential relations between an independent variable and the linear combination of all others. A preferred method of detecting multicollinearity is to regress each independent

variable on all other independent variables: Resultant R^2 values near 1.0 indicate that high multicollinearity exists (for a complete discussion of these issues, see Berry & Feldman, 1985; Lewis-Beck, 1980; Pedhazur, 1982; Schroeder, Sjoquist, & Stephan, 1986).

Consequently, each independent variable was regressed on all other independent variables to determine the R^2 values (see the third column of Table 1). Examination of these R^2 values indicates that a moderate degree of multicollinearity exists, with both organizational advantage and communication and information flow exhibiting the highest levels. Subsequent regression analyses revealed that, although communication and information flow and organizational advantage exhibit relatively high multicollinearity, each is an important predictor of the likelihood of website adoption. Thus, as Berry and Feldman (1985) suggest, "on many occasions . . . the most reasonable course when faced with high multicollinearity is to recognize its presence, but live with its consequences" (p. 49). However, future researchers should strive to better specify organizational advantage and communication and information flow and examine carefully their relative importance in innovation research.

6. It is important to note, however, that with hypotheses that propose a relation between the age of organizations' websites and other variables (Hypotheses 1b–10b) the retrospective collection of data relative to adoption date should be taken into account. Thus, for example, although there is a significant, positive relation between the age of organizations' websites and technical faddishness, it may be that when organizations initially established their sites, they did not find them to be particularly faddish. Instead, organizations may only now believe that having a website is a fad.

7. For example, social pressures may be most pronounced shortly after the achievement of a critical mass of users, because of the new viability of the innovation and corresponding pressures to take advantage of it. This notion is particularly important with interactive communication technologies, because of the reciprocal nature of interdependence among communicators (Fulk et al., 1996; Markus, 1990). Further research of website adoption by stages of the innovation-decision process (see Rogers, 1995) is necessary to identify the existence and pinpoint the buildup of such social pressures.

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