Receptivity to Distance Learning: The Effect of Technology, Reputation, Constraints, and Learning Preferences

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Abstract
Recent growth in distance learning (DL) represents a significant change to management education. Notwithstanding its importance, research on DL is at an early stage of development, particularly in understanding the effect of technology perceptions on students' receptivity toward DL. This study of 399 students at two universities investigates the role of perceived technology usefulness, technological familiarity and accessibility, reputation, constraints, learning preferences, and demographic factors on prospective receptivity toward DL. The results reveal significant relationships between many of these variables and DL receptivity, suggesting new challenges and opportunities for educators. They also indicate that some traditionally held assumptions, for example those regarding accessibility, reputation, and constraints, may not be valid in the new high-tech DL environment. Implications of the findings are discussed. (Keywords: distance learning, intention, survey, technology)

Since the recent explosive growth of the Internet and other interactive communication technologies (Ragothaman & Hoadley, 1997) in distance education, this old and venerable alternative (Phillips, 1998) to traditional classroom learning has become increasingly widespread and viable for a variety of reasons (Moore, 1997; Nyiri, 1997; Potashnik & Capper, 1998). The primary motivation of our study is to ascertain the effect of technology, in terms of delivery, on prospective students' propensity to consider distance learning (DL) courses as a traditional classroom alternative. The evidence of DL success is relatively equivocal despite an incredible growth rate in DL offerings and mounting evidence that there is no difference between traditional and technology-mediated learning (Russell, 1999).

Issues around technologies and DL are dramatically altering higher education (Matthews, 1998), and business schools are not immune to these changes. Universities must adapt to and adopt DL technologies if they are to be competitive in the coming years (Rahm & Reed, 1997). Although specific policy concerns surrounding DL are complex and numerous (e.g., curriculum design, admission standards, fees and costs, oversight, staffing, responsibility and liability, access, assessment; Gellman-Danley & Fetzer, 1998), it is clear that DL will continue to grow as the adult learner population expands and the nexus of new information technologies and education are explored and extended. Building on the

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premise that recent DL growth represents a significant change to higher education (e.g., interactive and Web-based technology), we argue that research on DL is in an early stage of development. No more evident is this than in our understanding of student attitudes toward this new teaching and learning mode.

Although much has been written about factors influencing the effectiveness of DL, there is a paucity of research examining a priori factors affecting DL receptivity. We view DL from the student's perspective before experiencing DL (i.e., a priori attitudes and preferences), focusing on student receptivity toward DL. This is a measure of intention to which we associate attitudinal constructs following the prescriptions of the information technology use literature. Looking specifically at the issue in question, researchers generally agree that the successful implementation (i.e., use) of any technology depends on factors related to user attitudes and opinions (Webster & Hackley, 1997). Our focus addresses different issues than those emphasized in the former perspective and, thus, can add value. For example, understanding the variables that influence student DL receptivity provides data for profiling the “distance learner” and can, therefore, serve to improve student recruitment, program design, course design, and retention (Biner & Dean, 1998).

DISTANCE LEARNING RECEPTIVITY MODEL AND HYPOTHESES

In our study, we examine a simple model of DL receptivity. Central to this model is our consideration of technological influences on DL choice, where little attention has been paid in previous research (Webster & Hackley, 1997) but where a great deal of attention has been paid to implementing new DL modes and evaluating the outcomes of technology-mediated learning (Russell, 1999).

In the following section, we develop the constructs of technological, reputational, constraints (e.g., work demands, distance to school, etc.), and learning preferences as important predictors of DL receptivity.

Distance Learning Receptivity

In general, we believe students will have a more negative than positive attitude toward DL. This occurs for several reasons, including the fear of the unknown, the nature of the research population (students currently enrolled in traditional college programs and sampled in class), and the relatively early stages of DL development of the universities in which the students in this study were enrolled.

H1a: Generally, students will not be receptive to DL.

Regarding delivery method, we predict that students will have a more positive attitude toward classes using more interactive forms of DL (e.g., Internet, videoconferencing, chat rooms) than less interactive forms (e.g., videotape, U.S. mail). This is because more interactive forms of DL are richer and better approximate the advantages of face-to-face interaction while preserving the convenience of DL. In addition, learning outcomes have been found to be maximized when student involvement and interaction are higher (Alavi, Wheeler, & Valacich, 1995; Leidner & Jarvenpaa, 1993). In short, interactive DL media are more
similar to traditional classes. Thus, they represent a lesser deviation from a student's common experience in delivery method resulting in lowered resistance.

**H1b:** Students will have a more positive DL attitude when using more interactive (e.g., Internet, videoconferencing, chat rooms) than less interactive forms (e.g., videotape, U.S. mail, etc.).

**Demographic Influences on DL receptivity**

The first component of this model includes demographics, because prior research has shown that distance learners may differ based on a wide variety of dimensions such as gender, employment, and student status. For example, it is agreed that adult working students are most likely to consider DL a viable option for learning.

We argue that several demographic characteristics will influence students' attitudes toward DL. First, as a control hypothesis, we predict that the gender of students will have no effect on DL receptivity. The argument that gender is a non-factor is consistent with DL-related findings by other researchers (Biner & Dean, 1998; Martens, Valcke, Portier, Wages, & Poelmans, 1997).

**H2a:** There will be no difference between men's and women's DL receptivity.

Second, we predict that students with more external responsibilities (e.g., in their work or home lives) will have a more positive attitude toward DL classes. That is, these students will have a greater need for flexibility and, thus, will perceive DL as better addressing their needs than will students with lower flexibility needs. This line of reasoning is implicitly suggested by the fact that the largest target populations of higher education institutions offering distance education courses are workers seeking skill updating or training (49% of institutions) and professionals seeking recertification (39% of institutions; National Center for Education Statistics [NCES], 1998). Similarly, research by Biner and Dean (1998) shows that the most successful (i.e., highest performing) DL students were those who had the greatest extracurricular demands. External responsibilities are manifest in such work-related factors as student status (i.e., full-time versus part-time enrollment), employment (i.e., full-time versus part-time jobs), and age (e.g., being older may be equated with having more life responsibilities).

**H2b:** Part-time students will be more receptive to DL than full-time students.

**H2c:** Full-time employees will be more receptive to DL than part-time and unemployed students.

**H2d:** Older students will be more receptive to DL than younger students.

**Technology Perceptions**

As previously mentioned, very little research on technology-mediated DL has been published, although the use and dependence of these technologies for DL delivery is evident (Cleveland & Bailey, 1994). We propose to imbue constructs extant in the technology-use literature as antecedents to behavioral intention and, therefore, to DL receptivity. The constructs we have included in the cur-
rent study are (a) perceived usefulness of technology, (b) technological familiarity, and (c) technological accessibility.

**Perceived Technology Usefulness**

Perceived usefulness is often cited as related to intention to use (Davis, 1989). For example, Davis found that perceived usefulness was positively associated with self-reported use and intention to use. Many others have reported similar findings for voice mail and dial-up services (Subramanian, 1994), voice mail alone (Chin & Todd, 1995), and group decision support systems (Sambamurthy & Chin, 1994). In summary, perceived usefulness has been found to be positively related to intention to use technology (DeLone & McLean, 1992; Igbaria, Guimares, & Davis, 1995). The distance learner must believe that distance technologies are useful if they are to positively evaluate the potential of DL to them.

**H3:** Perceived technology usefulness will be positively related to DL receptivity.

**Technology Familiarity**

Technology familiarity is also an important factor in a prospective user's evaluation of DL given that this learning will most likely take place in a technology-mediated manner. For example, Jackson, Chow, and Leitch (1997) found that prior use was an important factor in predicting intention (see also Benbasat, Dexter, & Todd, 1986; Fredricks & Dossett, 1983). Moreover, they found that it was not significantly related to perceived usefulness. Following these findings, we predict that technological familiarity will be positively related to DL receptivity based on the logic that the more one uses a technology, the more likely he or she will use it in the future.

**H4:** Technological familiarity with DL technologies will be positively related to DL receptivity.

**Technology Accessibility**

Finally, technology accessibility is also important in that distance learners will have to have access to the technology of choice used in the DL course. For example, research has shown that accessibility is an important factor in technology use across a wide variety of technologies use (Culnan, 1985; Hart & Rice, 1991; Kraemer, Danziger, Dunkle, & King, 1993). In addition, the importance of accessibility in explaining use has been clearly demonstrated in communication studies (O'Reilly, 1983). In a recent study, Wegerif (1998) found that students' effective collaboration was decreased by differential access to class conversations. If DL technologies provide access to information sources and communication between people, it follows that accessibility should be an important consideration for a DL choice and hence DL receptivity.

**H5:** Technology accessibility will be positively related to DL receptivity.

**General Distance Learning Perceptions**

There may be contextually specific considerations of intention that are unique to the behavior under study (Fishbein & Ajzen, 1975). In our study,
students may apply a number of criteria to their decision to take a DL class. An informal survey by us revealed that students could be receptive to taking a course through DL in order to reduce or limit expenses (e.g., [1] cost of course), to assure adequate standards of quality (e.g., considering such factors as [2] professor reputation, [3] DL program reputation, [4] school’s overall reputation, and [5] type of technology used in DL), or to address flexibility needs (e.g., considering such factors as [6] commute time from school, [7] family responsibilities, [8] work demands, [9] need for flexible schedule, and [10] the security and safety of school). The data collected on these items were subject to a factor analysis, revealing two factors that we labeled “reputation” and “constraints.” Reputation refers to the overall regard for the institution and its DL program. Constraints refers to the barriers faced by students in their educational pursuits. The “security and safety of the school” item loaded equivalently on both factors and was, therefore, removed.

It stands to reason that a superior institutional and DL program reputation would be more enticing to students and, therefore, predict DL receptivity. Insofar as DL is perceived as a means of overcoming or circumventing some of the constraints faced by students, this factor should also predict DL receptivity. Thus, following the dominant logic that a superior reputation and more formidable constraints are important criteria to distance learners, we adopt the falsifiable hypotheses that reputation and constraints will be positively related to DL receptivity.

\( H6a: \) Reputation will be positively related to DL receptivity.

\( H6b: \) Constraints will be positively related to DL receptivity.

Learning Preference Perceptions

Although DL is not new, it has not been widely experienced by most teachers and students. The dominant learning mode remains the traditional classroom with face-to-face structured classroom interaction with student-to-student interaction in groups in and outside class. Thus, it follows that distance learners who hold the traditional learning environment important are less likely to be receptive to DL in general. However, the more technology can approximate the importance of these learning preferences, the more receptive toward DL the student is likely to be.

We adopt the falsifiable hypothesis that student learning preferences regarding the traditional classroom environment will be negatively related with DL receptivity. This is because DL tends to place constraints on these dimensions relative to traditional face-to-face classes.

\( H7: \) Preference for traditional learning modes will be negatively associated with DL receptivity.

METHOD

Subjects and Procedure

Subjects were 399 undergraduate and graduate students enrolled in one of two private northeastern universities. Our subjects were predominantly full-
time (79.4%) undergraduate business majors (95.6%) in their 20s (average age = 25.21) who were currently working and had GPAs greater than 3.0 (average GPA = 3.21). It also reveals that a majority were White (61.2%), unmarried (81.1%), with no children (89.5%), and U.S. citizens (85.1%). There were a roughly similar number of male (43.7%) and female (56.3%) subjects.

Subjects were given a questionnaire in class by their professor that included detailed items measuring the constructs described in the following section.

Measures

Demographic Measures

Students identified themselves with demographic groups by checking categories (e.g., gender, student status, employment status, etc.) or filling in blanks (e.g., age, GPA, work experience, etc.).

Technology Measures

We employed several measures of technology in our study in an effort to capture perceptions about technology that have been previously shown to be related to intention, measured as receptivity in this study.

Perceived technology usefulness was measured following the logic of Davis' (1989) perceived usefulness instrument. Respondents were asked to rate the usefulness of 11 technologies (e.g., Internet, World Wide Web, e-mail, videoconferencing, chat rooms, audiotape, videotape, and U.S. mail) from "not useful at all" to "very useful." The items were subject to a factor analysis that revealed only one factor with an acceptable reliability of .86.

Technological familiarity was measured using the weighted average of seven items worded in the manner "On an average working day, how much time do you spend on the following media type?" (e.g., World Wide Web, e-mail, FTP, videoconferencing, news and discussion groups, electronic bulletin boards, and chat rooms) with the responses of "almost never," "Less than 1/2 hour," "From 1/2 to 1 hour," "1-2 hours," "2-3 hours," and "More than 3 hours." This scale had an acceptable reliability of .73.

Technology accessibility was measured using 15 items referring to access of the respondent's access to a broad range of technologies (e.g., Internet, videotape, audiotape, etc.) from home, work, and school. The sum of a respondent's answers (1 for yes, and 0 for no), ranging from 0 to 15, was used as the measure of accessibility.

Distance Learning Decision Criteria Measure

Student evaluation of DL criteria was measured using 5-point Likert-type scales (1 = not important, 2 = slightly important, 3 = moderately important, 4 = important, 5 = very important) in response to the following statement, "Please indicate how important each of these factors would be in your decision to take a distance learning course." Student learning preferences were measured using identical scales to those for DL criteria but were in response to the following statement, "Please indicate the importance of each of these items to your learning behavior in general."
The data collected on these items were subject to a factor analysis (Varimax rotation) that revealed two underlying factors, which we labeled "reputation" (items 1–5; $\alpha = .78$) and "constraints" (items 6–9; $\alpha = .81$). Thus, we have two factors regarding DL decision criteria.

**Learning Preference Measure**
Learning preferences were measured using a five-item scale that included items about the importance of (1) face-to-face interaction, (2) team presentations, (3) in-class group meetings, (4) out-of-class group meetings, and (5) a structured classroom environment. These preferences are a result of our deliberation in characterizing learning activities in the classroom. Thus, this item captures the extent to which a respondent values these traditional classroom experiences as important to learning. The learning preference scale exhibited a reasonable reliability ($\alpha = .86$); when factor analyzed, all the items converged on a single factor.

**General Student DL Receptivity Measure**
General student DL receptivity was measured using a single five-point Likert-type scale (1 = strongly agree, 2 = disagree to some extent, 3 = neutral, 4 = agree to some extent, 5 = strongly agree) in response to the following statement: "In general, I would be receptive toward distance learning."

Also included on the survey were 11 media questions that asked students to rate the extent to which they would consider a DL course that used a specific media (e.g., Web, videotape, bulletin board, etc.). These items were subject to a factor analysis (Varimax rotation) that revealed two distinct factors. The first referenced modern, more interactive media, while the second referenced traditional, less interactive media. Thus, we include a DL receptivity measure specific to interactive ($\alpha = .92$) and noninteractive media ($\alpha = .77$).

**RESULTS AND DISCUSSION**
It is clear that our respondents are representative of the traditional student enrolled in a business school. Thus, our results may be generalizable to similar populations, but at the same time are subject to questions as to their applicability to other populations.

We found that students had a slightly more positive than neutral receptivity toward DL, $X = 3.33$, $t(397) = 5.34$, $p < .001$, contrary to Hypothesis 1a. A potential explanation for this finding is that the students in the sample are more comfortable with technology and technological change than the hypothesis suggests. This may be explained by the case that DL is perceived by students as more of a tool to help them fulfill their needs (e.g., graduate on time) and less of a substitute to traditional studies.

When examining DL receptivity as framed by the media, we found that students were significantly more receptive to more interactive, $X = 3.24$, than less interactive modes, $X = 2.84$, $t(397) = 8.37$, $p < .001$, of DL. This finding supports Hypothesis 1b, in that students are generally more receptive to DL when more interactive media are considered. Because of the potential differences be-
between the general, interactive, and noninteractive DL receptivity measures, we chose to evaluate subsequent hypothesis tests with all three DL receptivity variables. This decision allows us to evaluate both the robustness and specificity of the receptivity predictors.

The correlations and descriptive statistics for the variables in the study, which are used in testing many of our hypotheses, are presented in Table 1.

**Demographic Factors**

There was no correlation or mean differences in responses between the two schools for general DL receptivity, $r = -.06$, $X_{School A} = 3.28$, $X_{School B} = 3.45$, $t(397) = -1.27$, $p = .21$; interactive DL receptivity, $r = .05$, $X_{School A} = 3.27$, $X_{School B} = 3.17$, $t(397) = .91$, $p = .36$; and noninteractive DL receptivity, $r = -.02$, $X_{School A} = 2.83$, $X_{School B} = 2.87$, $t(397) = -.35$, $p = .72$. Thus, we can conclude that the responses from these two populations are not dissimilar and can be treated as one with respect to the dependent variables of interest.

There were no correlational or mean differences in responses with respect to gender for general DL receptivity, $r = .04$, $X_{Male} = 3.39$, $X_{Female} = 2.29$, $t(397) = .81$, $p = .42$; interactive DL, $r = -.00$, $X_{Male} = 3.23$, $X_{Female} = 3.24$, $t(397) = .05$, $p = .95$; and noninteractive DL receptivity, $r = -.07$, $X_{Male} = 2.75$, $X_{Female} = 2.90$, $t(397) = -1.48$, $p = .14$. This finding supports Hypothesis 2b.

There were no mean differences in responses with respect to student status for general DL receptivity, $X_{Full Time} = 3.29$, $X_{Part Time} = 3.47$, $t(397) = -1.32$, $p = .19$; interactive, $X_{Full Time} = 3.25$, $X_{Part Time} = 3.21$, $t(397) = .44$, $p = .66$; and noninteractive DL, $X_{Full Time} = 2.82$, $X_{Part Time} = 2.94$, $t(397) = -.99$, $p = .32$. Although these means are in the right direction, with the exception of noninteractive DL receptivity, we find no support for Hypothesis 2b.

There were no consistent mean differences in responses with respect to employment status for general DL receptivity, $X_{Employed} = 3.49$, $X_{Unemployed} = 3.26$, $F(2,397) = 2.52$, $p = .08$; interactive, $X_{Employed} = 3.26$, $X_{Unemployed} = 3.12$, $F(2,397) = .52$, $p = .59$; and noninteractive; $X_{Employed} = 2.90$, $X_{Unemployed} = 2.79$, $F(2,397) = 2.82$, $F(2,397) = .51$, $p = .43$. That is, there are no statistically significant differences in means except for the difference between full-time and unemployed students with respect to general DL receptivity. However, the correlation between employment status and general DL receptivity is both positive and significant, Spearman $\rho = .13$, $p < .01$.

These results provide mixed support for Hypothesis 2c.

No relationship was found between age and general, $r = -.04$, or noninteractive, $r = .02$, DL receptivity. However, age is negatively related to interactive DL receptivity, $r = -.14$, $p < .08$. Contrary to Hypothesis 2d. this finding might be easily dismissed as the result of a more general trend toward lower technological familiarity, $r = .04$, and perceived usefulness of technology, $r = -.08$, by older students, although our data do not seem to support this explanation.

In summary, the hypotheses about demographic factors and DL receptivity in this sample suggest that there are no systematic differences between men and women; full-time or part-time students; and full-time, part-time, or unemployed students. There is also no association with age. With the exception of gender, these findings ran contrary to our hypotheses.
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*p < .05, **p < .01, ***p < .001. * Point bi-serial correlation (Rosenthal & Rosnow, 1984). † Spearman Rho. ‡ Kendall's Tau-b.
Technological Factors

Technology usefulness was positively and significantly related to general, \( r = .43, p < .001 \); interactive, \( r = .61, p < .001 \); and noninteractive, \( r = .52, p < .001 \), DL receptivity. The latter finding is counterintuitive, because the noninteractive technologies are not "high-tech," but the correlation is somewhat smaller than for interactive technologies, as one would expect. This result may simply be an artifact of an overall perception by students of DL as involving more interactive than noninteractive technologies. This explanation is supported in our results by the difference between interactive and noninteractive DL receptivity. Thus, Hypothesis 3 is supported.

Technology familiarity was positively and significantly related to general, \( r = .18, p < .001 \), and interactive, \( r = .21, p < .001 \) DL receptivity but not with noninteractive, \( r = .04, p < .04 \), DL receptivity. The first two results clearly support Hypothesis 4, but the latter result does not. This is most likely an artifact, because the technological familiarity scale only included items referring to interactive technologies (e.g., e-mail, videoconferencing, etc.) and not noninteractive technologies (e.g., postal mail, audiotapes, videotapes).

Interestingly, technology accessibility was not significantly related to general, \( r = .04; \) interactive, \( r = .04; \) or noninteractive, \( r = -.03, \) DL receptivity, providing no support for Hypothesis 5. One explanation may be that accessibility is better conceived of as a threshold variable. That is, it may be sufficient to have access to a technology from a single location, and additional locations are of no consequence. Another possible explanation is that accessibility may have multiple levels such that physical access is only one type of accessibility (Culnan, 1985). Finally, perhaps all respondents had access to a sufficient variety of DL technologies or expected that if they needed access they could get it, making accessibility a moot issue.

Learning Decision Criteria

We expected that both reputation and constraints would be positively related to DL receptivity. The correlations support both hypotheses for all three DL receptivity variables. Interestingly, these correlations are approximately the same magnitude, \( r = .20 \) to \( .25 \), except for the correlation between reputation and noninteractive DL receptivity, \( r = .12, p < .05 \), which is half of the others. Thus, it appears that reputation is significantly less important when noninteractive DL media are considered. These results support Hypothesis 6a and 6b.

Learning Preferences

As we hypothesized, preference for traditional learning was negatively related to general, \( r = -.22, p < .001 \); interactive, \( r = -.07, p > .10 \); and noninteractive, \( r = -.12, p < .05 \), DL receptivity. Interestingly, the correlation was not significant for interactive media. The most probable explanation is that the media referenced in this measure are capable of producing highly interactive DL settings that are most similar to the traditional learning environment. These results provide support for Hypothesis 7.
Relative Emphasis of Demographic, Learning Preferences, and Technological Factors

It is insufficient to study relevant factors associated with intention in isolation; rather, they should be considered in a more holistic and relativistic fashion. Which factors are the most relatively important predictors of DL receptivity? To answer this question, we used multiple regression for each of the three dependent variables (Table 2). The results are remarkably consistent in terms of the positive effect of perceived technology usefulness and the negative effect of a traditional classroom learning preference. Surprisingly, reputation was significant with respect to general, $\beta = .16$, and interactive, $\beta = .17$, DL receptivity but not for noninteractive DL receptivity, $\beta = .00$. Even more striking was the nonsignificant effect of constraints for each of the dependent variables.

For general DL receptivity, the regression was significant, $F(11,388) = 13.97, p < .001$, Adjusted $R^2 = .26$, with perceived usefulness, $\beta = .39$, $p < .001$; reputation, $\beta = .16$, $p < .001$; and learning preferences, $\beta = -.21$, $p < .001$, as significant predictors of receptivity. In comparison to the univariate relationships, it should be noted that significant relationships with employment status, technol-

Table 2. Multiple Regression Results

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>General Receptiveness to DL</th>
<th>Receptiveness to Interactive Delivery DL</th>
<th>Receptiveness to Noninteractive Delivery DL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Receptiveness to DL</td>
<td>Receptiveness to Interactive Delivery DL</td>
<td>Receptiveness to Noninteractive Delivery DL</td>
</tr>
<tr>
<td></td>
<td>Demographic controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>.05</td>
<td>-.01</td>
<td>.03</td>
</tr>
<tr>
<td>Age</td>
<td>-.03</td>
<td>-.16&quot;</td>
<td>-.01</td>
</tr>
<tr>
<td>Employed</td>
<td>-.10&quot;</td>
<td>-.08</td>
<td>-.01</td>
</tr>
<tr>
<td>Student status</td>
<td>-.03</td>
<td>.01</td>
<td>-.00</td>
</tr>
<tr>
<td>Gender</td>
<td>-.07</td>
<td>-.04</td>
<td>.04</td>
</tr>
<tr>
<td>Perceived technology usefulness</td>
<td>.39&quot;</td>
<td>.55&quot;</td>
<td>.51&quot;</td>
</tr>
<tr>
<td>Technology familiarity</td>
<td>.08</td>
<td>.09&quot;</td>
<td>-.06</td>
</tr>
<tr>
<td>Technology accessibility</td>
<td>-.04</td>
<td>-.03</td>
<td>-.06</td>
</tr>
<tr>
<td>Learning preferences</td>
<td>-.23&quot;</td>
<td>-.08&quot;</td>
<td>-.10&quot;</td>
</tr>
<tr>
<td>Regression statistics</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>$F$</td>
<td>13.97&quot;</td>
<td>25.59&quot;</td>
<td>13.89&quot;</td>
</tr>
<tr>
<td>$Df$ error</td>
<td>388</td>
<td>388</td>
<td>388</td>
</tr>
<tr>
<td>$N$</td>
<td>399</td>
<td>399</td>
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</tr>
<tr>
<td>$R^2$</td>
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<td>.42</td>
<td>.30</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.26</td>
<td>.40</td>
<td>.28</td>
</tr>
</tbody>
</table>

Note: Coefficients are standardized regression coefficients. $^p < .05$. $^* p < .01$. $^{**} p < .001$. $^{* * } p < .10.$

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ogy familiarity, and constraints were washed out. The conclusion is that the more DL technologies are perceived as useful, the better the reputation; also, the less a traditional learning setting is preferred, the more likely a student is to be receptive to DL.

For interactive DL receptivity, the regression was significant, \( F(11,388) = 25.59, p < .001 \), Adjusted \( R^2 = .40 \), with age, \( \beta = -.16, p < .01 \), perceived usefulness, \( \beta = .55, p < .001 \); reputation, \( \beta = .17, p < .001 \); and learning preferences, \( \beta = -.08, p < .001 \), as significant predictors of receptivity. In comparison to the univariate relationships, it should be noted that significant relationships with technology familiarity and constraints were washed out. Of the three regressions, this model accounted for the greatest variance, probably because of a general framing of DL as being technology mediated and because newer DL technologies have greatly improved on the plausibility of an interactive distance education.

For noninteractive DL receptivity, the regression was significant, \( F(1,388) = 13.89, p < .001 \), Adjusted \( R^2 = .28 \), with perceived usefulness, \( \beta = .51, p < .001 \), and learning preferences, \( \beta = -.10, p < .001 \), as significant predictors. In comparison to the univariate relationships, it should be noted that significant relationships with technology familiarity, reputation, and constraints were washed out.

**CONCLUSION**

The current study has added to our knowledge of DL receptivity by considering a priori issues in DL, examining technological factors in this analysis, and examining the relative emphases of these factors. In the following paragraphs, we discuss the implications of our study and call into question the limitations of our findings.

**Implications**

The first and most salient finding was the relative importance of perceived technology usefulness across the three different types of DL receptivity. The implications of this finding for DL are crystal clear. Providing a technology-mediated DL environment is not sufficient for a DL choice to be seen as viable; it must be coupled with a strong perception of the usefulness of that technology, in general, and to DL, specifically. Although new to the DL field, this finding is quite consistent in information technology research (cf. Taylor & Todd, 1995) and adds significantly to our understanding of DL. Moreover, this influential factor of DL receptivity is imminently changeable through education and experience with DL technologies. By communicating the usefulness and demonstrability of results in using DL technologies in the outcome of DL for the student, it is possible to enhance the DL receptivity for future and current DL students. Care needs to be taken here, because it may be the case that demonstrating no appreciable difference between distance and traditional learning (Russell, 1999) may not overcome the perception that DL courses may require more time or effort on the part of the student and instructor. On the plus side,
DL technology use has been shown to increase student perceptions of instructor originality and creativity (Forman, 1997); on the negative side, there is a general discrepancy between the expected and actual integration of technology into the classroom by educators (Fabry & Higgs, 1997).

Second, the best model, in terms of predictability of DL receptivity, referred to interactive DL receptivity. This suggests a general preference for a rich medium as represented by interactivity. The “richness” interpretation is supported by findings that, in general, students prefer more interactive to less interactive learning environments (Martens et al., 1997), and that DL technology, when it is of a more interactive nature, can better create the feeling of a true “class” (Hiltz & Wellman, 1997). This interpretation is also consistent with reports that interaction is vitally important for the quality of distance education because of the increased support and guidance it can provide. Specifically, interaction is related to greater feedback, beneficial small-group learning processes, and more frequent contact with the instructor (Distance Education at a Glance, 1995). The importance of this interactivity is being greatly facilitated by new technologies, but our results suggest that continued advancements should be sought.

Third, DL reputation and the need for flexibility (i.e., constraints) were positively associated with DL receptivity. The reputation finding is consistent with the relatively uncertain quality of DL programs when compared to traditional classroom environments and the relatively early stages of accreditation (i.e., measures of quality) processes for distance education programs. It also parallels Turoff’s (1998) argument that the state of DL quality control in the United States is in need of improvement and the fact that, until as recently as 1997, accreditation reviews have paid little attention to what was going on in this area. Thus, reputation may have been used as a proxy for quality. The flexibility finding is consistent with the notion that students with more responsibilities will be more receptive to DL. For example, research has shown that distance education is primarily targeted toward part-time students who cannot travel easily to campus (Jacobson, 1994). The face-to-face finding is generally consistent with research on interactive media and media richness (cf. Daft & Lengel, 1984; Webster & Hackley, 1997). This is especially important given the changes in the nature of “students.” According to the U.S. Department of Education (NCES, 1998), the percentage of 25- to 34-year-olds enrolled as college undergraduates increased by almost one-third between 1972 and 1994. Between 1976 and 1994, the percentage of undergraduates age 35 and older also increased by approximately one-third (Duguet, 1995). Turoff (1998) adds that there will be an increasing percentage of working college students (versus the traditional full-time student), and these individuals have greater outside commitments that create barriers to “traditional” education. Moreover, as the use of electronic media grows, higher education is becoming more competitive, and geographic monopolies are disappearing.

Fourth, the results indicate that some traditionally held assumptions about DL receptivity may not be valid in the new business environment. As manage-
ment becomes more and more high-tech, the predictive value (with respect to DL receptivity) of both technological accessibility and learning preferences seems to fall, whereas the importance of educational constraints appears to loom larger. Regarding accessibility, it seems as though technology's rapid expansion, increased pervasiveness, and subsequent availability all but make this a nonfactor. Regarding learning criteria, the advancement of technological sophistication being applied to DL is having a greater success mimicking the traditional classroom, thereby reducing the negative effects of DL on the “traditional learner.” Alternatively, the boom in DL programs offered by institutions seems to be accompanied by an emphasis on reputation as a primary determinant of DL receptivity. Thus it appears that, in the fast moving age of interactive media and high-tech management, there is much to one's name.

Limitations

Our study suffered from several common limitations that should be noted. First, although the subjects were students and student perceptions were our focus, these students were solely drawn from the populations of two northeastern institutions' business programs. Thus, the ability to generalize our findings is suspect. Although a sufficiently large sample may alleviate this concern, it is more likely that a series of samples across demographic and institutional strata would be both more useful and easier to administer. Second, we chose to study only a limited number of variables based on our interests, previous research, and parsimony. Admittedly, there are other constructs that may prove to be important, such as playfulness (Martocchio & Webster, 1992), result demonstrability (Moore & Benbasat, 1991), and social influence (Taylor & Todd, 1995). In addition, prior DL learning outcomes, as opposed to learning preferences, should be considered in future studies of current DL learners.

As distance education alternatives grow in their frequency and their use of new technologies, the importance of understanding the impact of technology perceptions to DL receptivity increases in parallel. Our current understanding within the DL field is rather limited, although the integration of findings and variables from other fields may quickly bridge this gap. Our research has taken one step toward that end.

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