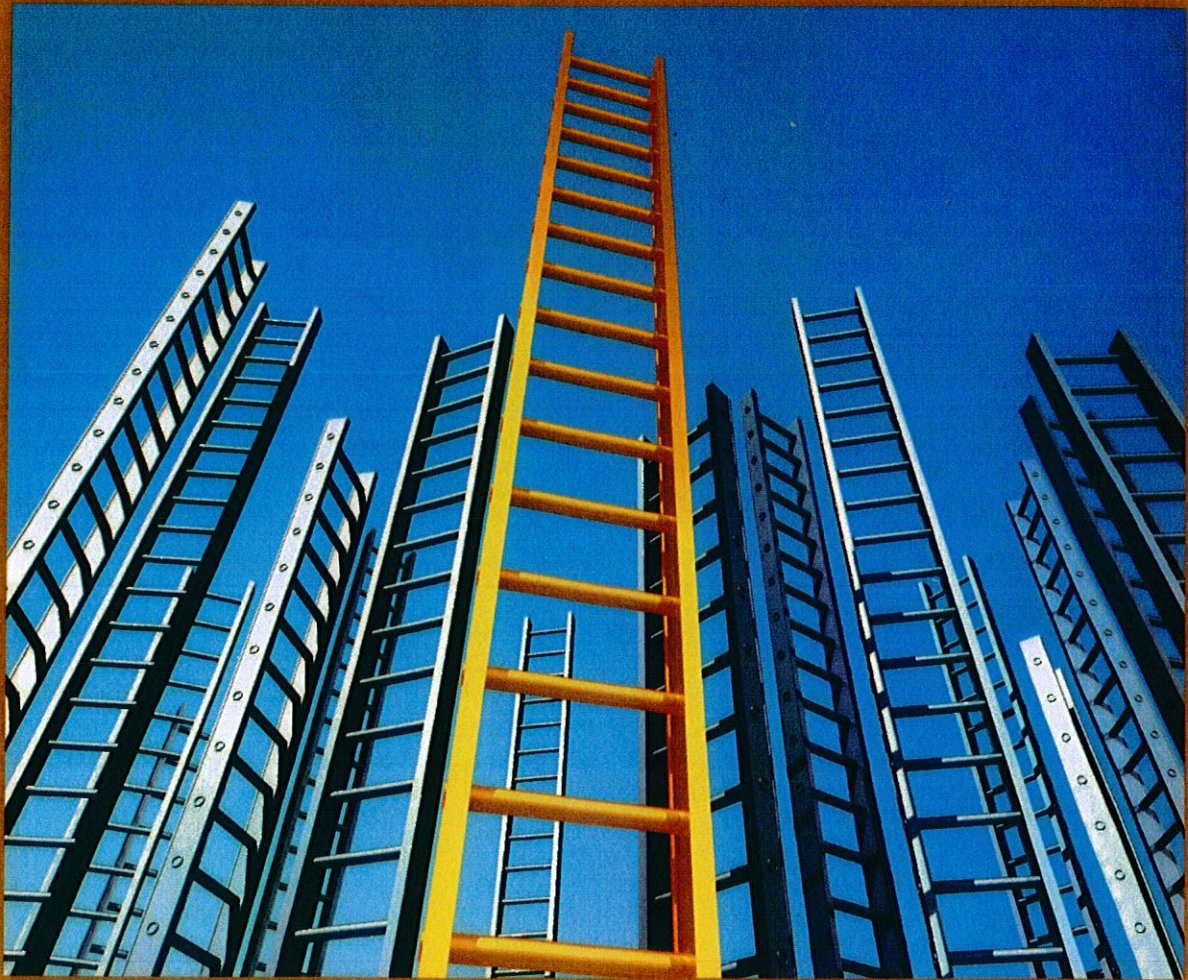


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Victor C.X. Wang

Volume II

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Victor C.X. Wang
Florida Atlantic University, USA

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Chapter 36

Leadership in Higher Education in Adopting a Telecommuting Program

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ABSTRACT

This study explored the perceived motivators and constraints that influence adoption of a telecommuting program at higher education institutions. Participants were 102 members of the College and University Professional Association for Human Resources (CUPA-HR) from 11 southern states. Sixty-four participants completed a 4-part survey via the World Wide Web; 38 participants completed the survey by mail. Both adopters and non-adopters of telecommuting programs identified that the primary motivator for adopting a telecommuting program was improvement of overall benefits to employees. Whereas adopters reported that cost of implementation was the primary constraint to adopting a telecommuting program, non-adopters reported a variety of other factors as the primary constraint. Results of this study have implications for implementation of and research on telecommuting programs in higher education.

INTRODUCTION

Nilles (1998) coined the term “telecommuting” while conducting research for energy conservation during the Arab oil embargo of the 1970s. Since the 1970s, the number of telecommuters as well

as interest in offering telecommuting as a viable management option has risen steadily. Thompson (1999) reported that a 1995 survey indicated that almost two thirds of all *Fortune 1000* companies had a telecommuting program in place, although only a small percentage of those programs were formal. The majority of companies offered telecommuting as an ad hoc option for selected

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employees. Companies offering formal telecommuting programs have included Apple Computer, Bell Atlantic, Boeing, CISCO Systems, Compaq, IBM, Intel, MCI Communications, Novell, Oracle, Pacific Bell, and many others (Langhoff, 1999).

As indicated by Langhoff's (1999) list, high-tech and information technology (IT) organizations have been the first to embrace telecommuting. Higher education institutions—with a history of being slow to adopt innovative programs—have fallen behind corporate America in adopting telecommuting programs. A search of the literature yielded just one study—Goldberg's 1993 research—that examined telecommuting program adoption in higher education. Because higher education institutions generally have structures and levels of complexity not found in business and industry, there might be differences in factors influencing adoption of new programs such as telecommuting as well. Therefore, research addressing telecommuting program adoption in higher education is needed. This study takes a step toward filling that void by exploring motivators and constraints to adopting a telecommuting program at higher education institutions.

BACKGROUND

Organizational Characteristics and Consideration

Factors Present in the Adoption Decision Process

Among the characteristics identified in the literature as being related to the adoption of telecommuting is the level of innovation in an organization (Bernardino, 1996; Tomaskovic-Devy & Risman, 1993). Furthermore, innovation is constrained by such characteristics as size and age of an organization and level of bureaucratic control. Larger organizations generally have been less innovative

and more bureaucratic than smaller organizations (Tomaskovic-Devy & Risman).

Rogers (1983) addressed the attributes of innovations and their adoption rate. He described five attributes of innovations: (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability, and (e) observability (p. 211). The first attribute indicates the strength of reward or punishment as a result of adoption of an innovation. Compatibility is how closely the innovation matches the existing social and cultural beliefs and need for innovation. The attribute complexity addresses the difficulty of using and understanding the innovation, and trialability is the degree to which an innovation undergoes experimentation. According to Rogers, these attributes are part of the complex process of determining the rate of adoption of innovations.

Other organizational characteristics that might influence adoption of a new program like telecommuting include trust in an organization's culture (Brewer & Snodgrass, 2007; Harrington & Ruppel, 1999) and the decision-making process that is in place (Yen & Mahmassani, 1997). Harrington and Ruppel wrote about the importance of culture in an organization and how trust and group values affect the adoption level of telecommuting. Yen and Mahmassani reported that the complexity of an employer's decision to adopt telecommuting is obvious because of the various means of decision-making in an organization. For example, whereas some organizations have one decision-maker, others have teams or groups who make decisions about changes on the scale of telecommuting.

Ellison (1999) studied the state of the art of telework research. Kraut (as cited in Ellison) stated that resistance to change was firmly surrounded by a long history of bureaucratic organizational structures. These structures are easily threatened by change; therefore, adoption of new technology (e.g., telecommuting) is met with resistance. Along the same theme, Goldberg (1993) stated that academia has been slow to adopt telecommuting because of the diffusion of administration. Since bureaucracy and diffusion are found frequently in

academia, the adoption of telecommuting could meet with serious resistance.

Among the studies in the literature addressing adoption of telecommuting and the level of innovation in an organization, only Goldberg's 1993 study was set in a university environment. His findings were supported by a report in *The Chronicle of Higher Education* that indicated that institutions of higher education were less likely to adopt innovations and on average waited 25 years before adopting a new innovation such as information technology or changes in curriculum (Siegfried, Getz, & Anderson, 1995).

Goldberg (1993) conducted interviews with administrators in higher education who had been involved in planning and implementing a telecommuting program. One interviewee articulated the complications involved with implementing telecommuting in higher education: "The difference between the university and any other organization is the faculty; faculty aren't like corporate people, and the faculty have a different view of things" (p. 120). Another respondent in the same study summarized the telecommuting program planning process as follows:

Do it as you should do all plans, and that is have everyone involved who's going to be impacted by it. That includes the employees, the supervisor, if they are a union shop, the union should be involved. You know, all the people who could be impacted by this situation. (p. 121)

Administration and decision-making in a higher education setting can be complex. Depending on the nature of the institution, governance bodies could include federal, state, and local governments, a board of trustees, faculty, a faculty senate, accreditation boards, administration, and students (Karol & Ginsburg, 1980). Birnbaum (1988) stated, "American colleges and universities are the most paradoxical of organizations" (p. 3). Problems of governance are rooted in the complex reporting structure that includes trust-

ees, faculty, and administration. To compound the problem, the larger the institution, the more likely there are other influences on management and decision-making. Legal issues, federal regulations, implementation of technology, and politics are a few of these. Birnbaum also wrote that larger institutions experience increased isolation between faculty and administration, in part due to workload and division of purpose.

Telecommuting Program Considerations

Implementation planning of a telecommuting program is a crucial step in the decision-making process. The literature contains a wealth of sources for guidance in implementing a telecommuting program. However, these sources, with one exception, do not address implementation of telecommuting in an academic setting.

Several researchers and authors agreed that obtaining top managerial or administrative support is essential to the success of any telecommuting program (Fusco, 1990; Hartman, Stoner, & Arora, 1991; Weiss, 1992). Nilles (1998) stated that the chief executive officer of the organization must at least be neutral to the idea of telecommuting or willing to try it personally. Nilles also stated that the entities listed as crucial to telecommuting success are an advisory board and one or more champions.

Program Design and Implementation

Critical to the success of a telecommuting program is the design and implementation of the program itself. Designing a telecommuting program requires research of employees' needs, potential pitfalls, and benefits inherent in offering the program. Employee selection for telecommuting must be studied carefully and implemented carefully to increase the success of the program (Goldberg, 1993).

Information on how to implement a telecommuting program is plentiful and remarkably easy to discover. In addition to the library as a viable source of information, many organizations publish their telecommuting programs, strategies, and design factors on the World Wide Web. Factors to consider during implementation include equipment requirements (Deepröse, 1999; Hartman et al., 1992), safety and security (Fairweather, 1999; York, 1999), management's resistance to change (Ellis & Webster, 1999; Fairweather, 1999; Gainey, Kelley, & Hill, 1999; Harrington & Ruppel, 1999; Pearlson & Saunders, 2001), and training (Davenport & Pearlson, 1998; Deepröse, 1999; Fister, 1999; Gordon, Jossi, Kiser, Lee, & Stamps, 1998; Kurland & Bailey, 1999).

Advantages of Telecommuting

Scholarly research as well as anecdotal data have identified many advantages of telecommuting programs. Although most literature labels these factors as advantages, some reports label them as motivators or benefits. This study assumed that the advantages of a telecommuting program were tied closely to the motivators of adopting a program. For example, an employer may offer telecommuting because it is expected to increase productivity, and it also is seen as an advantage.

The motivators for offering telecommuting cover a wide range of elements. Many states now have legislation that facilitates and encourages telecommuting because of heavy commuter traffic and pollution by vehicle emissions (Goldberg, 1993). Goldberg also noted that because many academic institutions are public, they are more likely to be impacted by state and local environmental laws and highway use. Positive factors associated with adoption of a telecommuting program include lower office space cost and support (Ahmadi, Helms, & Ross, 2000; Davenport & Pearlson, 1998; Deepröse, 1999; Ellison, 1999; Greenbaum, 1998; Kurland & Bailey, 1999; Kurland & Egan, 1999; Mariani, 2000; Schilling, 1999), increased

employee productivity and performance (Ahmadi et al. 2000; Cole-Gomolski, 1998; Davenport & Pearlson 1998; Deepröse, 1999; Gordon et al., 1998; Khalifa & Davidson, 2000; Kurland & Bailey, 1999; Solomon, 2000; Wilde, 2000), reduced job-related stress (Gainey et al., 1999; Mariani, 2000; McCune, 1998; Schwartz, 1997; Spillman & Markham, 1997), and better balance of work and family (Ahmadi et al. 2000.; Ellis & Webster, 1999; Gainey et al., 1999; Khalifa & Davidson, 2000; Mariani, 2000; Solomon, 2000; Wilde, 2000).

Disadvantages of Telecommuting

Naturally, there also are disadvantages to adoption of a telecommuting program, many of which are reported widely in the literature. Other labels of these same concepts are constraints and deterrents. This study assumed that disadvantages and constraints were related closely. For example, if an employer expected the cost of supporting an employee to increase if that employee began telecommuting, offering a telecommuting program could be deemed a disadvantage.

Bernardino (1996) identified lack of upper management support, cost, legal or regulatory issues (including union negotiations), and lack of interest from employees as constraints to implementing a telecommuting program. Other negative factors associated with adoption include communication difficulties with co-workers and supervisors (Coutu, 1998; Davenport & Pearlson, 1998; Deepröse, 1999; Greenbaum, 1998; Kurland & Bailey, 1999), feelings of isolation (Deepröse, 1999; Ellison, 1999; Greenbaum, 1998; Kurland & Egan, 1999; Schilling, 1999; Solomon, 2000), corporate culture conflict (Davenport & Pearlson; Ellison, 1999; Kurland & Bailey, 1999), and lack of office services and reference materials (Khalifa & Etezadi, 1997; Kurland & Bailey, 1999; Spillman & Markham, 1997).

Purpose of the Study

The purpose of this study was to explore some of the factors that influence the decision whether or not to adopt a telecommuting program in a higher education setting. The study examined the perceived constraints and motivators that influence adoption (or not) of a telecommuting program at an institution. Two research questions guided the study:

1. What is the relationship between the primary constraint to adopting a telecommuting program at an institution of higher education and the flexibility of the telecommuting program design?
2. What is the primary motivator that could be used to adopt a telecommuting program at an institution of higher education that does not have a telecommuting program?

Methodology

This study was designed to research some of the factors that influence the decision whether or not to adopt a telecommuting program in a higher education setting. Factors studied included the primary motivators and constraints involved in adoption of a telecommuting program. The study was conducted exclusively in higher education.

Population and Sample

The population for this study consisted of 347 members of the College and University Professional Association for Human Resources (CUPA-HR), a network of more than 6,500 human resources administrators representing nearly 1,700 colleges and universities. The targeted members came from 11 southern states. A random sample of 181 members was drawn from the population. This number was determined by data provided by Gay, Mills, and Airasian (2009).

Instrumentation

A survey instrument was developed by the researchers to explore the primary motivators and constraints experienced by academic institutions when considering adoption of a telecommuting program. It was comprised of four parts.

Part I of the survey collected data about the respondent's tenure at the institution. Part II of the survey requested basic information about the institution where the respondent was employed. Part III of the survey targeted those participants who indicated that there was a telecommuting program currently in place at their institution. Questions in this section addressed the design of the telecommuting program and assessed the program's level of flexibility. Part IV targeted respondents who indicated that their institution currently did not have a telecommuting program. Questions in this section were designed to determine the constraints that the respondent perceived as preventing the institution from offering a telecommuting program.

Respondents rated each question on a five-point Likert-type scale: 5 (*strongly agree*), 4 (*agree*), 3 (*undecided*), 2 (*disagree*), and 1 (*strongly disagree*). The instrument was pilot-tested and revised per recommendations of the pilot group.

Data Collection and Analysis

The survey method followed the procedures for collection of data as prescribed by Dillman (2000). The medium for survey distribution was the World Wide Web. After the participants were randomly selected, their email addresses were obtained from the CUPA-HR directory when possible. In 18 cases, an email address could not be found. In these cases, the member's postal address was obtained and used instead of the email address.

Members of CUPA-HR who had an available email address received an email with the universal resource locator (URL) of the survey in the body of the message. This provided the possibility for

immediate action on the part of the respondent. Each survey participant was asked to enter his or her email address on the survey instrument. The email and the letter promised confidentially but explained that the email address was needed to limit follow-up notifications.

Approximately 2 weeks later, a second email or letter was sent to non-respondents. Eight days later, a letter with a copy of the survey and a self-addressed, stamped envelope was sent to the remaining non-respondents. The last request to respond was sent out 3 weeks later. Emails were sent to final non-respondents who had a valid email address. Postcards were sent to those final non-respondents for whom an email address could not be found. At the end of 7 weeks, the survey was removed from the Web.

At the conclusion of the data collection process, it was determined that only 12 of the 101 respondents indicated they had a formal telecommuting program in place. Of those 12, 6 respondents failed to complete all of the questions about the program. The researchers contacted them by telephone and collected the remaining survey data. This resulted in 10 usable surveys that reported the existence of a formal telecommuting program. Responses were analyzed using descriptive statistics, *t*-tests, and chi-square analysis.

Findings

A total of 105 responses were collected. Three responses were deleted because they were duplicate entries in the database, leaving a total of 102 valid responses. Only 10 of the 102 respondents reported being adopters of telecommuting. Because a sample size of 10 did not provide enough statistical power in some cases to conduct relational tests, research questions that were originally intended to be analyzed using relational statistical tests were reported using descriptive statistical methods instead.

Primary Motivator for Adopting a Telecommuting Program and Program Flexibility

Due to the small number of responses, it was not possible to examine a statistical relationship between the primary motivator for adopting a telecommuting program and the level of flexibility of the telecommuting program design. Therefore, the data are presented in descriptive form.

Twelve respondents indicated there was a telecommuting program in place at their institution. Of the 12 respondents, 10 provided sufficient data to report. Eight respondents reported on the length of time their telecommuting programs had existed. The average length of time was 3 years and 2 months. The range of time was from 6 years and 5 months to 2 years. Ten respondents supplied information about the maximum and minimum number of days an employee could telecommute. The fewest number of days was zero; the highest was 5. The mean for minimum and maximum days was 3.

Information about respondents' telecommuting programs also was collected. Due to the small sample size, statistical tests could not be run to test the relationship between the motivating factor and program design elements. The item most frequently offered to telecommuters was the provision of a computer. Figure 1 displays the items offered to telecommuters and the frequencies for how often those items were offered. The most frequently cited motivator to adopt for this group was to "improve overall benefits." Those data are presented in Figure 2.

Primary Constraint to Adopting a Telecommuting Program and Program Flexibility

Due to the small number of reported telecommuting programs, descriptive statistics were used to analyze primary constraint to adopting a telecommuting program and the flexibility of the

Figure 1. Items offered as part of telecommuting program

Item	No		Yes	
	Count	%	Count	%
Schedule change	2	22.2%	7	77.8%
Computer	1	10.0%	9	90.0%
Printer	6	60.0%	4	40.0%
Fax	7	70.0%	3	30.0%
Communication line	6	60.0%	4	40.0%
Network access	3	30.0%	7	70.0%
Phone	7	70.0%	3	30.0%
Furniture	10	100.0%	0	0.00%

telecommuting program design. Not enough data were collected to test for a relationship.

Two constraints tied as the most frequently mentioned items. These were cost of implementing the program and legal or regulatory issues, each receiving 42.9% of responses. The remaining responses were for the "other" category.

Primary Constraint for Adopting a Telecommuting Program

Figure 3 presents the frequencies for responses about the primary constraint for adopting a telecommuting program. The most frequently selected response was "other," with 33.3% of the valid responses. Respondents were allowed to enter comments if "other" was indicated as their responses. The researchers grouped these responses into four general categories: (a) a program is in the early stages of development or

consideration; (b) there is an informal program or policy in place; (c) there is no perceived need or suitable jobs; and (d) various negative issues have or would be created if employees were allowed to telecommute.

There were 24 comments in the four categories. In the first category, 4 responses were counted. These responses indicated that a program was being developed or consideration was being given to development. The second category, totaling 7 responses, indicated an informal arrangement was being used. For the third category, 5 respondents indicated either that no need was perceived for telecommuting or that no jobs at the institution were suitable for such an arrangement. The fourth category had 8 responses and included statements such as "need office coverage," "perceived reduction in organizational effectiveness," and "extensive time is needed to place a new program."

Figure 2. Primary motivator to adopt—adopters

Motivator	Frequency	Percent	Valid percent
Employee interest	1	1.0	11.1
Increase recruiting/IT	1	1.0	11.1
Improve overall benefits	6	5.9	66.7
Other	1	1.0	11.1
Total	9	8.8	100.0

Figure 3. Frequencies of primary constraint to adopt—non-adopters

Constraint	Frequency	Percent	Valid percent	Cumulative percent
Other	24	23.5	33.3	33.3
Lack of interest	15	14.7	20.8	54.2
Lack of management support	13	12.7	18.1	72.2
Legal issues	9	8.8	12.5	84.7
Lack of knowledge	9	8.8	12.5	97.2
Cost of program	2	2.0	2.8	100.0
Valid total	72	70.6	100.0	
Missing	30	29.4		
Total	102	100.0		

Primary Motivator for Adopting a Telecommuting Program

The most frequently cited motivator to adopt telecommuting was “improvement of overall employee benefits.” The second highest primary motivator was “employee interest.” Figure 4 contains data relative to the frequencies of primary motivators to adopt a telecommuting program. For those respondents who indicated “other” as their response, comments were varied. Examples of comments were “parking and environmental issues,” “lack of existing office space,” and “increased retention rate for any category of employee, not just IT staff.”

Institutional Characteristics and Telecommuting

To determine if a relationship existed between size of institution and whether or not the institu-

tion offered a telecommuting program, the means for the number of employees and the number of students were calculated for adopters and non-adopters. The average number of employees for adopters was 3,942. The average student body size for the same group was 14,278. For non-adopters, the average number of employees was 1,575. The average student body size was 6,832.

A *t*-test was run to compare institution size of adopters and non-adopters. Variances were unequal for both measures so equal variances were not assumed. The results of this analysis revealed that for number of employees ($p = .089$) and for number of students ($p = .082$). These are not significant at the selected .05 level; however, they would be significant at a .10 level. This indicates that larger institutions may be more likely to have a telecommuting program. Analysis of those data is presented in Figure 5.

Carnegie Classification was used to categorize responding institutions by type. To determine if

Figure 4. Frequencies of primary motivators to adopt – non-adopters

Motivator	Frequency	Percent	Valid percent	Cumulative percent
Improve overall benefits	35	34.3	50.0	50.0
Employee interest	12	11.8	17.1	67.1
Increase productivity	10	9.8	14.3	81.4
Other	7	6.9	10.0	91.4
Increase retention/IT	6	5.9	8.6	100.0
Valid total	70	68.6	100.0	
Missing	32	31.4		
Total	102	100.0		

Figure 5. Size by existence of program

	Levene's test for equality of variances		Equality of means <i>t</i> -test		
	<i>F</i>	Sig.	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Retention					
Equal variances assumed	4.23	.04	-2.44	93	.02
Equal variances not assumed			-1.84	12.52	.09
Recruiting					
Equal variances assumed	7.14	.01	-2.62	90	.01
Equal variances not assumed			-1.89	12.38	.08

there was a difference between the classifications and whether or not a telecommuting program existed, a chi-square test was run and an exact *p* value calculated. An exact *p* value was used because the default estimated *p* value is not reliable for small samples. Results were chi-square = 16.439, *df* = 8, and exact *p* value = .044. This indicated a relationship between the type of institution and the existence of a telecommuting program. Among the adopters, 45.5% were classified as Research University I. In comparison, 29.7% and 21.6% of non-adopters were classified as Master's Universities and Colleges I and Associate of Arts Colleges, respectively. Figure 6 displays the results of the classification of those institutions cross-tabulated by adopters and non-adopters.

CONCLUSION

Discussion

Motivators influenced the decision to offer a telecommuting program. Adopters and non-adopters both cited "improvement of overall benefits" as the primary motivator to adopt a telecommuting program. Similar results were reported by Bernardino (1996). Her study revealed that employers were "primarily motivated by the need to address employees' needs" (p. 55). However, these results

are in contrast to Goldberg (1993), who reported the primary motivating factor discovered in his study was legislative mandates. However, many of the respondents in Goldberg's study were from universities in California where legislation regarding telecommuting was passed in the early 1990s.

Universities have an apparent interest in improving work life and overall benefits. However, the interest could mean offering more liberal vacations, flexible hours, flex-time, and other benefits tailored to the employee population at the institution. Universities could possibly be investing time and energy in more mature, well-defined programs instead of telecommuting programs. In his 1983 research, Rogers defined attributes of innovation that could be related to the adoption of telecommuting. Considering the complexity of decision-making and the process of implementing a new program, it could be that the relative advantages are not as readily observed as is needed in the higher education setting. Additionally, the compatibility component of the adoption process could pose several problems in that telecommuting changes the way people work and are supervised. Legislation regarding telecommuting might serve as an impetus for higher education institutions to focus on implementing telecommuting programs.

For adopters, the most commonly cited constraint was cost of implementing the program. This is supported by the literature (Davenport & Pearlson, 1998; Khalifa & Etezdi, 1997). The

Figure 6. Cross-tabulation of Carnegie Classification and existence of telecommuting program

Carnegie Classification	Telecommuting Program		Total
	No	Yes	
<i>Associate of Arts Colleges</i>			
Count	16	1	17
% within telecommuting program	21.6	9.1	20.0
<i>Baccalaureate Colleges I</i>			
Count	12	2	14
% within telecommuting program	16.2	18.2	16.5
<i>Baccalaureate Colleges II</i>			
Count	7	1	8
% within telecommuting program	9.5	9.1	9.4
<i>Doctoral University I</i>			
Count	2	1	3
% within telecommuting program	2.7	9.1	3.5
<i>Doctoral University II</i>			
Count	4	1	5
% within telecommuting program	5.4	9.1	5.9
<i>Masters Universities and Colleges I</i>			
Count	22	0	22
% within telecommuting program	29.7	0.0	25.9
<i>Professional Schools and Specialized Institutions</i>			
Count	2	0	2
% within telecommuting program	2.7	0.0	2.4
<i>Research University I</i>			
Count	6	5	11
% within telecommuting program	8.1	45.5	12.9
<i>Research University II</i>			
Count	3	0	3
% within telecommuting program	4.1	0.0	3.5
Total			
Count	74	11	85
% within telecommuting program	100.0	100.0	100.0

cost factor also could be related to the number of respondents who reported budget cuts in the last 3 years (42 of 96). Telecommuting is not a well-defined employee benefit in comparison with other work life benefits such as flex-hours, day care, and on-site health clubs. This could possibly deter employers from launching a program, particularly in lean budget times.

Constraints impact the decision to offer a telecommuting program. For non-adopters, the most commonly cited constraint selected was "other." Their explanations for citing "other" fell into four categories: (a) a program is in the early stages of development or consideration; (b) an informal program or policy is in place; (c) there is not perceived need or suitable jobs, and (d) various negative issues have or would be created if employees were allowed to telecommute.

This finding is different from most research reported on primary constraints to adopt tele-

commuting. Bernardino (1996) reported that one of the major barriers to the wide acceptance of telecommuting was managerial concern. Goldberg (1993) reported that "convincing management" (p. 216) of the benefits of telecommuting was an issue. This finding might be indicative of one of the many differences between higher education and other industries. Therefore, future research on telecommuting that focuses on the higher education community is warranted.

Size of institution could be impacting the need for telecommuting. In the present study the average size of the adopters was much larger than the average size of non-adopters. Other possible factors embedded in that statistic could be the proximity to large cities, which would entail increased competition from private industry for workers, a wider variety of jobs, and, subsequently, more positions suitable for telecommuting. Smaller institutions where employees are required to

perform many job functions would be less able to offer telecommuting.

A partial of the description of a Research University I includes criteria such as giving "high priority to research" and "offering graduate education through the doctorate degree" (The Carnegie Foundation for the Advancement of Teaching, 2001, Table 4, ¶ 1). Type Research University I institutions also receive at least \$40 million dollars in federal support, which implies a large student body and workforce. The number of Research University I institutions in 2000 was 89. With this small number, it is possible the number of institutions able to support telecommuting is relatively small.

Recommendations

Although this study revealed some promising data, additional studies could build on the results of this study and provide a greater wealth of knowledge in this area. Future research should be conducted in conjunction with Rogers' (1983) research on adoption of innovations. Using the categories of adopters and attributes of rate of adoption, a comprehensive study using Rogers' theory would reveal much more about the estimated level of telecommuting adoption in a specific industry such as higher education. Further research should be based on the decision-making phase of the adoption stages as described in Rogers and Shoemaker's (1971) paradigm that shows functions in the authority-innovation decision process.

This study found that size and type of institution are influential in the decision to adopt telecommuting. Future studies should concentrate on those institutions found to be more likely to have a formal telecommuting program in place. Since this study found that large institutions and those classified as Research University I are more likely to have adopted telecommuting, these institutions should be targeted specifically. Using the Carnegie Classification categories as a dependent variable could prove useful in determining the specific

organizational characteristics present in institutions choosing to adopt telecommuting programs.

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KEY TERMS AND DEFINITIONS

Adopter: Adopters reported that cost of implementation was the *primary constraint* to adopting a telecommuting program.

CUPA-HR: College and University Professional Association for Human Resources.

Non-Adopter: Non-adopters of telecommuting programs identified that the primary motivator for adopting a telecommuting program was improvement of overall benefits to employees.

Telecommuting: Flexible work arrangement that allows employees to work at home.