Early and Late Adopters of IT Innovations: Extensions to Innovation Diffusion Theory

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September 15, 1998

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Abstract

This paper draws upon innovation diffusion theory and more recent conceptualizations of IT adoption behavior to examine systematic differences among Rogers' adopter categories. We extend Rogers' theory by characterizing adopter categories based on personality, belief, and attitudinal variables recently found to be salient in IT adoption behaviors. Theoretical predictions were empirically tested via a field study of 326 potential users of an IT innovation, which included early adopters as well as non-adopters in the sample. Results provide strong support for the research hypotheses. Theoretical and practical implications that follow are discussed.

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Introduction

Information technology adoption behaviors persist as an important issue among academics and practitioners alike. As a consequence, the past decade has witnessed considerable research activity devoted to better understanding the processes underlying such behavior. A significant proportion of this activity has focused on developing more robust theoretical models for the phenomenon (e.g., Davis, 1989; Fulk et al., 1990), whereas the remainder has sought empirical support for proposed conceptualizations through a variety of studies across a range of information technologies and contexts (e.g., Mathieson, 1990; Davis et al., 1989; Adams et al., 1992; Sjazna, 1996).

New information technologies represent innovations for potential adopters: "an idea, practice, or object that is perceived as new by an individual or other unit of adoption." (Rogers, 1995; p. 11). One popular and enduring conceptualization of innovation adoption behavior is Rogers' theory of the diffusion of innovations. Although the overall theory is rich and complex, its essence views the innovation adoption process as one of information gathering and uncertainty reduction. Information about the existence of an innovation, as well as its characteristics and features, flows through the social system within which adopters are situated. Potential adopters engage in information seeking behaviors to learn about the expected consequences of using the innovation. An assessment and evaluation of this information manifests itself in the form of beliefs about the innovation, and is then a proximal antecedent of adoption behavior. The theory also contains predictions regarding the spread of an innovation through a social system, i.e., the diffusion process, which is postulated to follow a sigmoidal or S-shaped curve.

The S-shaped curve of cumulative adopters gives rise to a bell-shaped distribution of adopters. Rogers utilizes this distribution to distinguish between five categories of adopters – ranging from "innovators" to

"laggards" – derived from their time of adoption of the innovation. Based on a meta-analysis of findings from a wide range of studies in several innovation domains, he also offers several generalizations regarding early adopters versus the rest related to the socioeconomic status of adopters, personality characteristics, and communication behaviors. Subsequent tests of these generalizations in the domain of IT innovation (e.g., Brancheau and Wetherbe, 1990; Burkhardt and Brass, 1990) have produced mixed results – while empirical support has been established for some generalizations, others have not yielded results consistent with the theoretical predictions.

Mixed results notwithstanding, the ability to distinguish early adopters of an IT innovation from the rest is clearly a matter of considerable theoretical and practical relevance. Early adopters frequently serve as opinion leaders who can persuade others to adopt the innovation by providing evaluative information (Rogers, 1995). An understanding of the characteristics of such individuals can assist managers in targeting new technology implementation appropriately. From the perspective of theory development, knowledge about the characteristics of early adopters can help researchers develop richer theoretical models that explain adoption behaviors across a range of adopter types.

Rogers' theory was developed in the broad context of innovations of all varieties, and not IT *per se*. Since his articulation of the theory, others have identified salient influences specifically for IT adoption behaviors by examining alternative models rooted in social psychology (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975; Ajzen and Madden, 1986), social learning theory (Bandura, 1997), and social influence theories (Fulk et al., 1990). In this paper we draw upon innovation diffusion theory and more recent conceptualizations of IT adoption behavior to examine systematic differences among Rogers' adopter categories. Rather than posit causal relationships between diverse antecedent conditions and *usage* behavior as has been done in recent work (e.g., Davis, 1989; Taylor and Todd, 1995), we study how early adopters differ from other potential users for the same set of variables. Thus, we extend Rogers' theory by characterizing adopter categories based on variables recently found to be salient in IT

adoption behaviors. Theoretical predictions were empirically tested via a field study of 326 potential users of an IT innovation, which included early adopters as well as non-adopters in the sample. Results provide strong support for the research hypotheses. Theoretical and practical implications that follow are discussed.

Theoretical Background and Research Hypotheses

According to Rogers (1983; 1995), the distribution of adopters of an innovation can be approximated by a normal distribution of the time of adoption. Using the mean and standard deviation of this distribution as a method of segmentation results in five adopter categories: innovators, early adopters, early majority, late majority, and laggards. In discussing the dominant characteristics of each category, Rogers characterizes innovators as venturesome, early adopters as opinion leaders who are widely respected in their social circle, early majority members as "deliberate", the late majority as "skeptical" about the value of an innovation, and laggards as "traditional." For the purposes of the subsequent discussion, we use the phrase "early adopters" to include Rogers' categories of innovators and early adopters, and the phrase "later adopters" to connote individuals belonging to any of the three remaining categories[1]. In general, early adopters use innovations even when the uncertainty surrounding potential use is high, and the benefits of the innovation have not become widely visible and accepted.

Rogers uses innovativeness, operationalized as time of adoption, to derive adopter categories. However, Agarwal and Prasad (1998), in reviewing prior work that has examined Rogers' notion of innovativeness, present evidence suggesting that Rogers' definition of a theoretical construct in operational terms suffers from methodological limitations. Notable shortcomings include its measurement as an *ex post* descriptor of behavior, thereby precluding its use as a predictor, and a lack of metrics to assess the reliability and validity of the construct. To address these limitations, Agarwal and Prasad developed and validated a construct labeled "personal innovativeness in the domain of IT" (PIIT) which they conceptually defined

as the willingness of an individual to try out any new information technology. In so far as early adopters of an innovation are ones that have exhibited their willingness to use an innovation through overt behavior, we propose:

H1: Early adopters of an IT innovation exhibit greater personal innovativeness in the domain of IT than do later adopters.

Recent theories in technology acceptance, specifically the technology acceptance model (TAM), have received considerable theoretical and empirical support (Davis et al., 1989; Taylor and Todd, 1995; Mathieson, 1991). TAM, which is based upon the theory of reasoned action from the social psychology literature (Ajzen and Fishbein, 1980), postulates that technology adoption behavior is an outcome of an individual's affective response to, or attitude toward, the innovation. Thus, we expect early adopters of an innovation to exhibit more positive affective responses, resulting in:

H2: Early adopters of an IT innovation have more positive attitudes toward the use of the innovation than do later adopters.

TAM also posits that attitude toward an IT innovation is determined by two salient beliefs: perceptions of usefulness of the IT and perceptions of ease of use. In innovation diffusion theory, these beliefs are labeled the perceived attributes of an innovation. The former belief, perceived usefulness, in TAM is similar in spirit to Rogers' conceptualization of the relative advantage of an innovation: the extent to which the innovation offers better ways of performing a task than extant means for performance. The latter perception is an individual's subjective assessment that use of the innovation will be relatively free of cognitive burden, and represents the direct opposite of Rogers' description of the complexity of an innovation. Although there is wide spread empirical support for usefulness and ease of use as being salient in technology adoption decisions, there is some discrepancy in the literature with regard to the relative importance of these two perceptions as predictors of different technology acceptance outcomes. For example, Davis (1993) found usefulness to be far more important than ease of use in predicting usage,

[1] This method of categorization is similar to that utilized by Brancheau and Wetherbe (1990).

whereas Adams et al. (1992) obtained the opposite result. Agarwal and Prasad (1997) found ease of use to be non-significant for current use as well as future use intentions of an IT innovation, while relative advantage was significant only for future use intentions. Karahanna et al. (1998) posited that behavioral beliefs underlying the attitude developed by users of an IT innovation would be richer and more complex than those underlying attitudes of potential adopters. However, their empirical results indicated exactly the opposite: individuals who had not yet adopted the new technology appeared to base their attitudes on more complex belief sets than those who had adopted the technology. In other words, potential adopters had several more distinct beliefs about the new technology than did individuals who had already adopted the technology.

Based on these studies we expect that the belief structure of early adopters, who have already completed a subjective evaluation of the new technology, is relatively monolithic. In contrast, later adopters, who have not yet progressed to the adoption stage, are more likely to possess distinct beliefs about the innovation. These expectations are summarized below:

H3: Usefulness and ease of use constitute distinct beliefs for later adopters of an IT innovation but are indistinguishable for early adopters.

While the technology acceptance model has been widely accepted as a parsimonious and robust conceptualization of IT adoption behaviors, recent work has examined more complex causal models that include additional constructs as predictors of IT adoption (e.g., Taylor and Todd, 1995). Among these is the theory of planned behavior (TPB), which represents an extension to the theory of reasoned action. According to this theory, behavior is driven by a normative component (subjective norm), an affective component (attitude toward the behavior), and a control component (perceived behavioral control). The importance of subjective norms, or the extent to which an adopter perceives pressure from the social environment in which she is situated, finds support in an alternate theory, viz., social influence models (Fulk et al., 1995). Pressure emanating from the social environment to engage in a particular behavior is

likely to influence technology adoption because individuals do not always base adoption decisions on strictly rational evaluations.

Who among early or late adopters is likely to perceive greater social pressure? At first glance it might appear that innovators, by virtue of their risk-taking propensity, are relatively immune to social influence. Consider, however, the observation made by Midgley and Dowling (1978): "an individual's susceptibility to interpersonal messages may be governed by psychological factors such as empathy, while the receipt of these messages will be a function of their integration with a social system." (p. 236). Rogers (1995), in describing differences in communication behavior among early and late adopters notes that early adopters exhibit greater social participation, and are more highly interconnected through personal networks in the relevant social system than later adopters. He also notes that earlier adopters exhibit greater empathy than do later adopters. Arguably, to the extent that greater social participation creates more opportunities for and potential sources of influence, it is reasonable to expect early adopters to perceive greater social pressure than late adopters. Thus, we test:

H4: Subjective norms for using an IT innovation are more salient for early adopters of the innovation than for later adopters.

A second component of TPB, perceived behavioral control, has been shown to be significant for IT adoption outcomes. Perceived behavioral control captures an individual's beliefs about the "presence or absence of requisite resources and opportunities," (Ajzen and Madden, 1986). Higher perceived behavioral control is posited to be related to intentions to perform a particular behavior, as well as the actual behavior. Recently Taylor and Todd (1995) decomposed the theory of planned behavior and suggested that perceived behavioral control is jointly influenced by facilitating conditions and self-efficacy. While the former captures resource availability, the latter is an individual's assessment of their personal capability to perform the desired behavior. Self-efficacy derives its conceptual foundations from a rich literature related to social learning theory (Bandura, 1997), whereas facilitating conditions are based on work by Triandis (1979). Rogers (1995) generalizes that early adopters are less fatalistic than

late adopters, where fatalism is described as the "the degree to which an individual perceives a lack of ability to control his or her future." (1995: p. 273.) Following from these arguments, we hypothesize that in the context of the adoption of a new IT, perceived behavioral control, perceptions regarding facilitators in the environment, and self-efficacy with regard to IT will be higher for early adopters than for later adopters. The relationship between early adoption and self-efficacy in the domain of IT has also been posited and empirically tested by Burkhardt and Brass (1990).

H5: Perceived behavioral control over the use of an IT innovation is higher for early adopters of the innovation than for later adopters.

H6: Perceptions of facilitating conditions for the use of an IT innovation are higher for early adopters of the innovation than for later adopters.

H7: Early adopters of an IT innovation exhibit greater self-efficacy with regard to IT than do later adopters.

As noted earlier, an ability to characterize early adopters has theoretical and practical relevance. Rogers' generalizations focus primarily on demographic differences and less so on beliefs and attitudes. The explicit examination of differences along these dimensions can allow for the development of more focused interventions when managers desire to implement new information technologies.

Methodology and Results

The target innovation examined in this study is a Web registration system at a large university. Recent implementation of this technology afforded an excellent opportunity to collect data on early versus late adopters. A brief history of the development of the system, followed by the sampling method used for the study, the operationalization of research variables, and results are provided below.

The IT Innovation and Study Context

In 1985, the only available method of registering for college classes at this university consisted of an iterative process whereby all students stood in numerous queues while attempting to gain entry to their requested classes. One could wait hours just to learn that a particular class had been filled by a student in

the same line earlier. This then entailed selecting another course and repeating the wait in line. In 1986, this non-automated system was replaced by telephone course registration, where students could add and drop classes through an interactive voice response application[2]

From 1986 until 1998, the university registered all of its matriculated students by either telephone or by assisted terminal entry. Terminal entry was provided as a service primarily to conform to the Americans with Disabilities Act. In the spring semester of 1998, the university implemented Internet Course Registration for the summer semester. The application also featured a searchable on-line Directory of Classes, in real time. The searchable on-line Directory of Classes is in fact "smarter" and more up-to-date than the traditional printed Directory of Classes which is only accurate up until approximately the date of publication. As classes are filled, or added or canceled, the changes are transparently reflected upon the client browser session because the Web Registration application is completely functional within real time.

Designed to supplement, rather than replace, telephone course registration, the Web Registration application was released as a usable system in summer 1998. The summer semester was selected because, historically, registration traffic for the summer semester is lower than for fall and spring semesters. Thus, any problems that arose could theoretically be handled quickly. Whether in their hometowns or at the university, students merely have to place a local telephone call to their respective Internet Service Providers[3] and employ an Internet browser in order to access and use the Web Registration application. With the new system, three modes of registration are available to students: terminal, telephone, and Internet.

Generally the same messages and information available through the telephone registration system are used for Web Registration. The front-end applications are identical in function, although verbiage for the

[2] The university was the first in the United States to offer course registration over the telephone.
[3] The university also provided all students with ppp accounts.

various media output has been adjusted to enable universal understanding of the systems by all students, even if they first select one mode of registration and then another at a later date. Students who request courses that are closed, cancelled, or full, are told this information, and for classes that are full, sections of the same course available at other times are suggested.

At 8:00 am on March 14, 1998, Web registration opened for the summer semester on the same day and time that telephone registration began. Parallel implementation was deemed necessary because of the mission critical nature of the application, and it was decided that the two systems would continue to function in tandem indefinitely. The Web registration system offered a unique opportunity to segment the user population into Rogers' adopter categories. Its use as the target application for testing the research hypotheses is appropriate for several reasons: it is a volitional system; there are alternate means available for accomplishing the same task; and the application itself is completely new to the student population. Of the 15,513 students who registered using all means for the summer semester of 1998, approximately 11.5% (1,772) students registered via the Web application.

Sample and Data Collection

The overall research strategy employed was a field survey of students who registered for summer classes. Of the total population of approximately 15,500 students, a stratified random sample was constructed. We used stratification to ensure representation from all major academic areas (as reflected in colleges and schools) within the university. The summer Directory of Classes was utilized to construct the sample. A total of 326 students in 16 different classes offered in 5 academic areas were surveyed; frequency of respondents by college and by academic level is shown in Table 1. As the data indicate, the sample consisted of a broad range of respondents in terms of the degree program they were enrolled in. Of the 326 respondents, 54 (approximately 16% of the total sample) indicated they used the Web registration system, while the remainder used an alternate method for registration. The proportion of users obtained

in this sample is close to the proportion of early adopters in the overall population, further underscoring the representativeness of the sample.

****Table 1 here****

Operationalization of Research Variables

All research hypotheses were constructed to test expected differences between "early adopters" and "late adopters." For the purposes of this study, early adopters were those who indicated on the survey that they had utilized the Web registration system to register for summer classes. All those who selected other methods of registration (i.e., the telephone or in person at the registrar's office) were categorized as late adopters. Such a method for distinguishing early adopters from the rest is reasonable in that data were collected early in the summer semester, only a few weeks after the innovation had been implemented. Moreover, the population proportion of early adopters as compared with sample proportion lends credence to the fact that data were collected at an appropriate stage of the diffusion of this innovation.

The remainder of the research constructs were measured using multi-item scales developed and validated in prior studies. Personal innovativeness in the domain of IT was operationalized using the four-item scale developed by Agarwal and Prasad (1998). Ajzen and Fishbein's (1980) definition of attitude yielded the three-item measure used in this research. Usefulness and ease of use beliefs were measured using four-item scales developed by Davis (1989; 1993); while subjective norms, perceived behavioral control, facilitating conditions, and self-efficacy scales were based on those utilized by Taylor and Todd (1995). All scales and items are listed in the Appendix. Respondents circled their level of agreement or disagreement on a 7-point Likert scaled anchored with the values 'Strongly Disagree" and "Strongly Agree." Table 2 summarizes the internal consistency of each scale as measured by Cronbach's alpha. With the exception of subjective norm, all scales exhibited adequate reliability with Cronbach's alpha being close to or above the recommended 0.7 level (Nunnally, 1978). The less than ideal reliability for subjective norm, however, should not diminish the relationships found to be significant.

****Table 2 here****

Results

T-tests were utilized to test Hypotheses 1 and 2, and 4 through 7; results are shown in Table 3. The t-statistic utilized is a 2-tailed one; when the homoscedasticity assumption was violated for the two samples, the appropriate adjusted t-statistic is reported. Hypothesis 3, which posited that usefulness and ease of use beliefs for early adopters would be indistinguishable from each other was tested via a principal components factor analysis with varimax rotation on the 8 items comprising the usefulness and ease of use scales. The analysis was conducted for both early adopters and later adopters. Tables 4a and 4b present results of the factor analysis for both groups. All seven research hypotheses were supported by the empirical data: early adopters exhibited significantly greater personal innovativeness in the domain of IT and significantly more positive attitudes toward use of the IT innovation (Hypotheses 1 and 2). Consistent with the predictions of Hypothesis 3, factor analysis of usefulness and ease of use belief items for early adopters yielded a single factor that explained 71.5% of the variance, while, for later adopters, two factors were extracted that together explained 79% of the variance. As expected, items for usefulness and ease of use loaded on the conceptual constructs they were intended to measure. Finally, Hypotheses 4 through 7, which posited differences among early and late adopters on constructs derived from the theory of planned behavior, were all supported:

***Tables 3, 4a, 4b here ***

Prior to discussing the implications of the findings, the limitations of this research must be acknowledged. The first relates to our characterization of "later adopters" as those who had not used the target innovation during the "first possible use" period. Arguably some individuals within this category may eventually be non-adopters in that they continue to use the old method of registration. Nevertheless, for the purposes of distinguishing innovators from "others," this method of classification is satisfactory. The second limitation of this study is the low reliability for subjective norm. However, as noted earlier, the reliability should not affect the interpretation of the relationship found to be significant. Moreover, the items for subjective norm used here are identical to those used by Taylor and Todd (1995); the reliability of this scale for their sample was above 0.8.

Discussion and Conclusions

In this study we sought to extend Rogers' typology of innovators and later adopters and generalizations derived from this typology specifically to the domain of IT. We juxtaposed Rogers' generalizations with belief and attitudinal constructs recently found to be salient in technology adoption, and derived predictions regarding expected differences for these beliefs and attitudes among those who are early adopters of an IT innovation and those who are relatively late in adoption. Results provided strong support for the theoretical predictions. Several implications for theory and practice follow.

The ability to understand how innovators in IT differ from others has implications for the development of theoretical models explaining IT usage behaviors. The technology acceptance model suggests that behavioral intentions to use an IT are determined by attitude and usefulness beliefs, while attitude is an outcome of usefulness and ease of use beliefs. Our results suggest that these beliefs are indistinguishable for the early adopters of an IT innovation. Although the length of time subsequent to adoption for which these beliefs remain indistinguishable is a question for future work, the finding does raise an issue about the appropriateness of using TAM to predict future use intentions for individuals who have already adopted an innovation. In other words, TAM might be more suitable for predicting the behavior of non-adopters rather than current users. The finding that belief structures become diffuse and undifferentiated upon adoption is certainly an issue that merits further work.

One plausible explanation of this finding may reside in the proclivity of early adopters to take risks. As indicated earlier in this paper, PIIT captures an individual's willingness to try out new information technology. Individuals with high PIIT are likely to be impulsive by nature and may not think through the reasons and implications for their actions. In other words, they may "dive in" and try the technology due to their curious and risk-taking nature, and not necessarily base their decision on the concrete

advantages for doing so. Individuals low in PIIT may carefully consider the reasons and consequences for adopting technology, thereby forming concrete beliefs regarding its usefulness and ease of use.

We proposed and confirmed a paradoxical relationship that rather than being immune to social influence, early adopters perceive stronger pro-innovation messages from their social circle than do later adopters. However, it is important to distinguish between social messages that encourage an individual to act like an innovative person in general and those that encourage the use of a specific IT innovation. For example, early adopters may not be susceptible to generalized social influence, i.e., they will not become more or less innovative due to social influence but they may be more inclined to try a specific innovation if their curiosity is aroused by a social interaction. A fruitful area of future research then would be to examine how early and late adopters differ with regard to social norms emanating from generalized pro-innovation messages versus specialized messages that suggest the use of a specific innovation.

Further, the exact nature of social influence may represent an avenue of future research. The marketing literature (e.g., Herr, et al., 1991) as well as some research in the field of information systems (Galletta, et. al., 1995) has suggested that negative messages are more salient than positive messages in determining innovation adoption attitudes and behaviors. Researchers can test the impact of these two types of social influence on various stages of Roger's S curve.

In conclusion, a contribution of this paper is to extend Rogers' theory to include constructs derived from recent conceptualizations of innovation adoption in the domain of IT. A review of the empirical research in IT adoption indicates that the majority of studies have been conducted with target innovations that have been in existence for some time. Thus, to the best of our knowledge, little is known about the belief and attitudinal structures of "new users." Such knowledge could be of great value in developing managerial prescriptions for improving the new technology adoption process.

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Table 1.
Sample Demographics

College	Valid N	Missing
Undeclared	5	6
Arts and Sciences*	34	
Business	108	
Education	38	
Engineering	77	
Humanities and Social Science**	58	
Level		
Freshman	2	5
Sophomore	9	
Junior	64	
Senior	171	
Graduate	75	

Notes: * Includes Communications, Consumer Sciences, Criminology
** Includes Music, Theater, Social Work

Table 2.
Scale Reliabilities

Construct	Number of Items	Reliability*
Personal innovativeness	4	.80
Attitude	3	.87
Usefulness	4	.92
Ease of use	4	.93
Subjective norms	2	.52
Behavioral control	3	.81
Facilitating conditions	2	.66
Self-efficacy	3	.93

Notes: * Cronbach's alpha is reported

Table 3.
Early Adopters Versus Others: T-tests

Construct	Early Adopters		Others		t-value	p-value
	Mean	***S.D.***	***Mean***	***S.D.***		
Personal innovativeness	5.67	1.04	4.88	1.17	-4.58	.000
Attitude	5.26	0.76	4.67	0.76	-5.21	.000
Subjective norms	4.42	1.15	4.08	1.00	-2.02	.048
Behavioral control	6.19	1.12	5.34	1.39	-4.84	.000
Facilitating conditions	2.78	1.32	3.27	1.45	2.30	.022
Self-efficacy	6.20	1.17	5.19	1.41	-5.60	.000

Table 4a.
Factor Analysis of Usefulness and Ease of Use Beliefs
Early Adopters

Item	Loading
EOU1	0.869
EOU2	0.862
EOU3	0.714
EOU4	0.902
USEFUL1	0.823
USEFUL2	0.736
USEFUL3	0.915
USEFUL4	0.918
Eigen Value	5.72
Percent of Variance	71.5

Table 4b.
Factor Analysis of Usefulness and Ease of Use Beliefs
Later Adopters

Item	Factor1	Factor2
EOU1	0.809	0.376
EOU2	0.756	0.439
EOU3	0.860	0.216
EOU4	0.876	0.306
USEFUL1	0.184	0.854
USEFUL2	0.374	0.796
USEFUL3	0.346	0.852
USEFUL4	0.429	0.747
Eigen Value	5.32	1.00
Cumulative Percent of Variance	66.59	79.15

Appendix
Scales and Items

Personal Innovativeness in the Domain of IT
1. I like to experiment with new information technologies.
2. If I heard about a new information technology, I would look for ways to experiment with it.
3. Among my peers, I am usually the first to try out new information technologies.
4. In general, I am hesitant to try out new information technologies*.

Attitude
1. Using the Web registration system is a good idea.
2. Using the Web registration system is a wise idea.
3. I like the idea of using the Web registration system.

Usefulness
1. Using Web registration enables me to accomplish tasks more quickly.
2. Using Web registration increases my productivity.
3. Using the Web makes it easier for me to register.
4. I find the Web to be a useful way of registering.

Ease of Use
1. Learning to use the Web registration system was easy for me.
2. I find it easy to do what I want to do with the Web registration system.
3. How to use the Web registration is clear and understandable.
4. I have found the Web registration system to be easy to use.

Subjective Norm
1. People who influence my behavior think that I should use the Web registration system.
2. People who are important to me think that I should use the Web registration system.

Behavioral Control
1. I would be able to use the Web registration system.
2. Using the Web registration system is entirely within my control.
3. I have the resources and the knowledge and the ability to make use of the Web registration system.

Facilitating Conditions
1. There will not be enough computers around for everyone to use the Web registration system.
2. I won't be able to find a computer to use the Web registration system when I want to.

Self-Efficacy
1. I would feel comfortable using the Web registration system on my own.
2. I could use the Web registration system even if there was no one around to help.
3. If I wanted to, I could easily use the Web registration system on my own.

Notes: * reverse scaled item