

FACULTY PERCEPTIONS OF PEDAGOGICAL BENEFITS OF WEB 2.0 TECHNOLOGIES AND VARIABLES RELATED TO ADOPTION

Pamela A. Dupin-Bryant, Utah State University, pam.dupin-bryant@usu.edu

ABSTRACT

In recent years, a variety of Web 2.0 technologies have surfaced as a means for collaboration and information sharing. While countless students and businesses have embraced these emerging technologies, information systems (IS) educators may not be applying these technologies in their classrooms. The purpose of this paper is to initiate the design of an on-going research study that will explore current role of Web 2.0 technologies, specifically wikis, blogs, and social networking sites in information systems classroom instruction; assess faculty perceptions of pedagogical benefits of Web 2.0 applications; describe current faculty use of Web 2.0 technologies; and how to adopt these technologies with informed decisions. This study should promote discussion on whether or how these emerging technologies can influence the way we educate future IS professionals. Results may also prove helpful to educators in implementing Web 2.0 technologies into the IS curriculum and to help prepare students to utilize these collaborative tools in business settings.

Keywords: Web 2.0, Wikis, Blogs, Social Networking, IS Pedagogy, and Technology Adoption

INTRODUCTION

Over the past several decades, Internet technologies such as e-mail and course management systems have emerged as common tools for enhancing the learning process in most higher education disciplines [15]. In recent years, a variety of Web 2.0 technologies have surfaced as a means for collaboration and information sharing. While students and businesses have embraced these emerging technologies such as wikis, blogs, and social networks [7, 10, 19], information systems (IS) educators may not be applying these technologies in their classrooms. Kane and Fichman [13] suggest Web 2.0 tools have revolutionized business practices yet “we have engaged in comparatively little discussion on whether or how these emerging technologies can influence the way we practice our own craft as academicians.” With Web 2.0 technologies students can create collective knowledge through social interactions [15] thus enhancing the IS curriculum. Although adopting innovative Web 2.0 technologies may provide closer connections to students and promote knowledge sharing and creation, usage should be based on solid theoretical underpinnings [14, 18].

IS researchers and educators alike have advocated for the integration of these collaborative tools to improve the teaching and learning process [5, 9, 10, 12, 13, 16, 18]. Whether “one’s passion as an IS academic is personally trying out Web 2.0 technologies in innovative ways...[or] watching how the use of Web 2.0 technologies fundamentally changes our theories” [14], Web 2.0 technologies will continue to enable the IS discipline [13, 18]. Yet, anecdotal evidence and the lack of empirical studies in this area suggests limited use of Web 2.0 technologies in formal higher education IS coursework. Te’eni [18] suggests many IS educators have experimented in class with Web 2.0 technologies. Yet, research describing current IS faculty use of Web 2.0 technologies and perceptions of pedagogical benefits is lacking.

The purpose of this paper is to initiate the design of an on-going research study that will 1) explore current role of Web 2.0 technologies, specifically wikis, blogs, and social networking sites in information systems classroom instruction; 2) assess faculty perceptions of pedagogical benefits of Web 2.0 applications; 3) describe current faculty use of Web 2.0 technologies; and 4) how to adopt these technologies with informed decisions. Research questions include: (a) To what extent do IS faculty currently use Web 2.0 technologies to facilitate classroom learning? (b) What are faculty perceptions of the pedagogical benefits of wikis? (c) What are faculty perceptions of the pedagogical benefits of social networking sites? (d) What are faculty perceptions of the pedagogical benefits of blogs? and (e) What variables best predict IS faculty’s decision to adopt Web 2.0 technologies? This study seeks to

promote discussion amongst IS educators on whether or how these emerging technologies can influence the way we educate future IS professionals. Results may also prove helpful to educators in implementing Web 2.0 technologies into the IS curriculum and to help prepare students to utilize these dynamic, collaborative tools in business practices. This work in progress paper is organized as follows. Theoretical background and research hypotheses are presented along with the research model. Since this paper outlines research in progress a detailed methodology section is presented prior to concluding remarks.

THEORETICAL BACKGROUND AND HYPOTHESES

This study seeks to investigate behavioral beliefs of the individual in explaining Web 2.0 technology attitude, intention, and actual usage/behavior. Technology adoption can be conceptualized as a behavior. Behavioral intention research is often studied holistically using comprehensive models. Yet, looking at intention to adopt Web 2.0 technologies in this manner can be crippling. Theorists suggest information systems research focusing on behavioral intention should refine and tailor a theory to fit a specific research context [11]. A recent study on Web 2.0 technology adoption customized an accepted behavioral intention model and concentrated on a subset of constructs [1].

Ajzen [2] developed a behavioral intention model that is widely cited and tested empirically. This study focuses on the attitude component of Ajzen's Theory of Planned Behavior (TPB). Behavioral beliefs according to the TPB refer to the beliefs about consequences of a particular behavior; they "produce a favorable or unfavorable attitude toward the behavior" [3]. This study focuses on behavioral beliefs related to *perceived usefulness*. As with Ajzen's comprehensive model [4], this model suggests attitude toward the behavior leads to behavioral intention. Intention is defined as the cognitive representation of an individual's subjective probability to perform a given behavior and in Ajzen's model [4], intention is assumed to be the immediate antecedent to behavior.

Figure 1 summarizes the research model. Each variable included in the research model, as antecedents of technology adoption, are described below along with associated research hypotheses. Hypotheses are stated in alternative form.

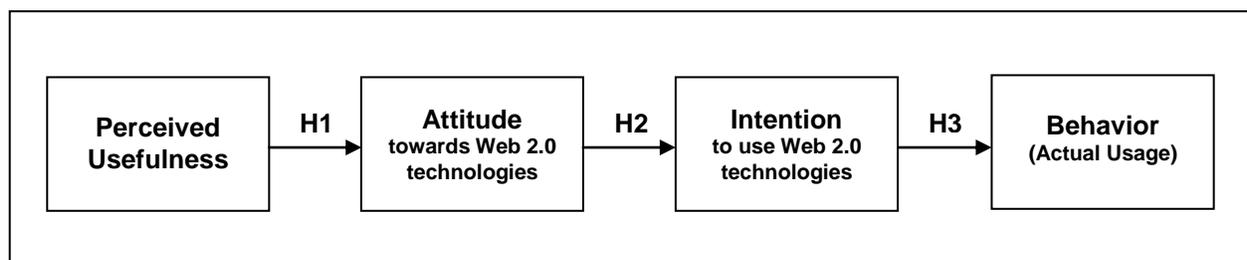


Figure 1. Research Model

Perceived Usefulness

Derived from the word *useful* (i.e. capable of being used advantageously), Davis [6] defined perceived usefulness as the degree to which a person believes that using a particular system or technology will improve performance. Perceived usefulness of using Web 2.0 technologies is defined as "the extent to which faculty members believe that using Web 2.0 will enhance their effectiveness in the classroom" [1]. In relationship to Web 2.0 technologies, a recent study looked at perceived usefulness. Ajjan and Hartshorne [1] found a significant positive relationship between perceived usefulness and attitude toward Web 2.0 technologies. Relative to the general TPB, Taylor and Todd [17] decomposed the attitude component to include perceived usefulness as an antecedent to attitude. This study will explore the relationship between perceived usefulness and attitude toward Web 2.0 technologies.

Hypothesis 1a (H1): The greater an individual perceives the usefulness of wikis, the more favorable his or her attitude is towards usage of wikis.

Hypothesis 1b (H1): The greater an individual perceives the usefulness of social networking sites, the more favorable his or her attitude is towards usage of social networking sites.

Hypothesis 1c (H1): The greater an individual perceives the usefulness of blogs, the more favorable his or her attitude is towards usage of blogs.

Attitude

The theory of planned behavior contends that attitude toward the behavior leads to behavioral intention [4]. Attitude in regards to Web 2.0 technology is defined as a psychological tendency of evaluating the technology and generating certain favorable or unfavorable responses. A recent study supports the assertion that attitude towards Web 2.0 technologies is a determinant of intention to use the technology [1]. This study will build upon this work and explore the relationship between attitude towards Web 2.0 technologies and intention to use these technologies.

Hypothesis 2a (H2): The more favorable an individual's attitude is toward wikis, the greater his or her intention will be to use wikis.

Hypothesis 2b (H2): The more favorable an individual's attitude is toward social networking sites, the greater his or her intention will be to use social networking sites.

Hypothesis 2c (H2): The more favorable an individual's attitude is toward blogs, the greater his or her intention will be to use blogs.

Intention

The theory of planned behavior posits intention is the most important determinant factor in predicting actual behavior; "given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises....Intention is thus assumed to be the immediate antecedent of behavior" [2]. A perfect relationship between intention and actual behavior does not exist; yet intention is considered a proximal measure of behavior [8]. In a recent study of Web 2.0 technologies to supplement in-class learning by higher education faculty, a very significant relationship was found between intention and actual behavior [1]. This study will explore the relationship between IS faculty intention to employ Web 2.0 technologies in their courses and actual usage/behavior.

Hypothesis 3a (H3): The more favorable an individual's intention to use wikis, the greater his or her actual behavior will be to use wikis.

Hypothesis 3b (H3): The more favorable an individual's intention to use social networking sites, the greater his or her actual behavior will be to use social networking sites.

Hypothesis 3c (H3): The more favorable an individual's intention to use blogs, the greater his or her actual behavior will be to use blogs.

RESEARCH METHODOLOGY

This study seeks to gather evidence from information systems faculty who teach at the University level that will lead to general conclusions about faculty perceptions of the pedagogical benefits of Web 2.0 applications, current faculty use of Web 2.0 technologies, and relationships between perceived usefulness, attitude, intention, and behavior using a descriptive and correlational, quantitative research design.

Sampling Procedure

Participants will be randomly selected from information systems faculty registered on the Association for Information Systems Faculty Directory (<http://m360.aisnet.org/frontend/search.aspx?cs=1082>). The information systems faculty (i.e. 8,902) listed on this site will comprise the accessible population. A sample size of 200 was determined for this study. The sample size is based on power analysis, by reviewing methodologies of related research, and by consulting a minimum total sample size table. To insure the sample size will be reached the study will assume a 50% response rate and thus approximately 400 individuals will be randomly selected to participate.

Data Collection

Participants will be solicited via email from the aforementioned faculty directory. Selected participants will be asked to complete a web-based survey which includes demographic information and items related to Web 2.0 technologies. Since the sample frame was carefully selected and based on relevance to the research goals, the anticipated salience of the survey's content to respondents is high. Information about the faculty who completed the survey will be provided to make it easier to identify the appropriate group to whom inferences apply. The subjects will not identify themselves on the questionnaires. The responses will be anonymous to encourage participation. However, since there are significant issues associated with Web-based survey research related to privacy and security, a third-party Web-based data collection tool will be used. This study will use SurveyMonkey to assure the security of information transmitted over the Web. SurveyMonkey is a reputable data collection tool that employs multiple layers of security to insure data will remain private and secure.

Instrumentation

An online questionnaire will be used to collect data for this study. The instrument was carefully developed based on Ajzen's Theory of Planned Behavior [2, 3, 4] and by following the recommendations in *Constructing Theory of Planned Behaviour Questionnaires: Manual for Researchers* [8]. Items will be interspersed prior to data collection and 25% of the survey questions will be reverse-scaled in order to protect against positive response bias. The survey items use 7-point likert scales. Items to measure *perceived usefulness* (strongly disagree to strongly agree) were generated based on the perceived usefulness scale used by Ajjan and Hartshorne [1]. The *attitude* scale was developed based on the scales of Ajjan and Hartshorne [1] and in accordance with the TPB instrument development manuals [3, 8]. The behavioral *intention* scale was developed using scales designed by Ajjan and Hartshorne [1]. The *actual usage/behavior* scale was developed in accordance with the TPB instrument development manuals [3, 8]. Appendix A lists the items in each scale.

Data Analysis

Various techniques will be used to analyze the data, including descriptive statistics, reliability analysis, and factor analysis to assess construct validity. Correlational analysis will be used to investigate relationships between the behavioral belief – perceived usefulness, attitude, intention, and behavior (Hypotheses 1 – 3). A card sort has been conducted on ten respondents to test face validity. Results will be triangulated with exploratory factor analysis performed on approximately fifty faculty members participating in a pilot test.

CONCLUSIONS

This study promises to make several important contributions to theory, practice, and education. Kane and Fichman [13] suggests "IS researchers have spent considerable time exploring the impact and implications of these [Web 2.0] tools in organizations, but we argue those same researchers have not spent sufficient time considering whether and how these new technologies may provide opportunities for us to reform our core practices of research, review, and teaching." This study will contribute new knowledge to the field and may help enhance the educational quality of IS programs. This study should promote discussion amongst IS educators on whether or how these emerging technologies can influence the way we educate future information systems professionals. Results may also prove

helpful to educators in implementing Web 2.0 technologies into the IS curriculum and to help prepare students to utilize these Internet-based collaborative tools in business practices.

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APPENDIX A. MEASURES

<i>Measurement Items – 7 Point Likert Scales</i>	
<i>Perceived Usefulness (Strongly Agree to Strongly Disagree)</i>	
PU1	Using Wikis will help my students learn more about the subject
PU2	Using Wikis will improve students' satisfaction with the course
PU3	Using Wikis will improve students' grades
PU4	Using Wikis will increase student-faculty interaction
PU5	Using Wikis will increase student-student interaction

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PU6	Using <i>Social Networking Sites</i> will help my students learn more about the subject
PU7	Using <i>Social Networking Sites</i> will improve students' satisfaction with the course
PU8	Using <i>Social Networking Sites</i> will improve students' grades
PU9	Using <i>Social Networking Sites</i> will increase student-faculty interaction
PU10	Using <i>Social Networking Sites</i> will increase student-student interaction
PU11	Using <i>Blogs</i> will help my students learn more about the subject
PU12	Using <i>Blogs</i> will improve students' satisfaction with the course
PU13	Using <i>Blogs</i> will improve students' grades
PU14	Using <i>Blogs</i> will increase student-faculty interaction
PU15	Using <i>Blogs</i> will increase student-student interaction
<i>Attitude</i> (Strongly Agree to Strongly Disagree)	
AT1	<i>Wikis</i> are a useful teaching tool
AT2	The advantages of using <i>wikis</i> as a teaching tool outweighs the disadvantages
AT3	Using <i>wikis</i> as a teaching tool is a good idea
AT4	<i>Social Networking Sites</i> are a useful teaching tool
AT5	The advantages of using <i>Social Networking Sites</i> as a teaching tool outweighs the disadvantages
AT6	Using <i>Social Networking Sites</i> as a teaching tool is a good idea
AT7	<i>Blogs</i> are a useful teaching tool
AT8	The advantages of using <i>blogs</i> as a teaching tool outweighs the disadvantages
AT9	Using <i>blogs</i> as a teaching tool is a good idea
<i>Intention</i> (Strongly Agree to Strongly Disagree)	
IN1	I intend to use <i>wikis</i> in my courses
IN2	I expect to use <i>wikis</i> as a teaching tool in the future
IN3	I will likely add <i>wikis</i> as a teaching tool to my courses in the future
IN4	I intend to use <i>Social Networking Sites</i> in my courses
IN5	I expect to use <i>Social Networking Sites</i> as a teaching tool in the future
IN6	I will likely add <i>Social Networking Sites</i> as a teaching tool to my courses in the future
IN7	I intend to use <i>blogs</i> in my courses
IN8	I expect to use <i>blogs</i> as a teaching tool in the future
IN9	I will likely add <i>blogs</i> as a teaching tool to my courses in the future
<i>Actual Usage/Behavior</i> (Strongly Agree to Strongly Disagree)	
AU1	I currently use <i>wikis</i> in my courses
AU2	I have used <i>wikis</i> as a teaching tool in my courses this past year
AU3	I have added <i>wikis</i> as a teaching tool to my courses in the past year
AU4	I currently use <i>Social Networking Sites</i> in my courses
AU5	I have used <i>Social Networking Sites</i> as a teaching tool in my courses this past year
AU6	I have added <i>Social Networking Sites</i> as a teaching tool to my courses in the past year
AU7	I currently use <i>blogs</i> in my courses
AU8	I have used <i>blogs</i> as a teaching tool in my courses this past year
AU9	I have added <i>blogs</i> as a teaching tool to my courses in the past year