

Association for Information Systems AIS Electronic Library (AISeL)

AMCIS 1998 Proceedings

Americas Conference on Information Systems
(AMCIS)

December 1998

Extending the Technology Acceptance Model with Motivation and Social Factors

Ron Thompson
University of Vermont

Follow this and additional works at: <http://aisel.aisnet.org/amcis1998>

Recommended Citation

Thompson, Ron, "Extending the Technology Acceptance Model with Motivation and Social Factors" (1998). *AMCIS 1998 Proceedings*. 254.
<http://aisel.aisnet.org/amcis1998/254>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1998 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Extending the Technology Acceptance Model with Motivation and Social Factors

Ron Thompson

School of Business Administration
University of Vermont

Abstract

The Technology Acceptance Model (TAM) proposed by Davis (1986) has been tested in a number of studies, and has received considerable support. The model is parsimonious, easy to understand, and provides reasonable explanatory value under a variety of conditions. As part of a larger study, two factors (Motivation to complete the task and Social Factors) were added to the TAM model, and tested with two data samples. In the first test, Motivation and Social Factors exerted much stronger direct influences on Intentions than the TAM constructs, and the amount of variance explained in Intentions increased significantly (26 % with TAM alone; 47% with Motivation and Social Factors added). Motivation and Social Factors alone explained over 40% of the variance in Intentions. In the second test, the results were less dramatic. Differences between the samples are used to interpret the observed results. Specifically, in the context where respondents had no choice over the selection of technology, Motivation and Social Factors played a very strong part in influencing Intentions. When a choice of tools was offered, the Attitude toward using the tool exerted the strongest influence on Intentions.

Introduction

The Technology Acceptance Model (TAM) has been used in numerous studies (e.g., Davis et al., 1989; Mathieson, 1991; Taylor and Todd, 1995), and in each case TAM was shown to explain a reasonable amount of the variance in Intentions to use a technology and/or actual use of the technology. From the results of these studies, it would seem that we could conclude that the primary components of TAM (beliefs about Ease of Use and Perceived Usefulness, and Attitudes toward using the technology) do in fact provide a parsimonious way of predicting Intentions and Use.

In the study reported here, a test was made of this conclusion. As part of a larger study, TAM was used with a sample of 63 undergraduate students to explain their intentions to use the Access database management system (DBMS) to complete a course project. The second test involved a sample of 82 students, and their intentions to use the HomeSite Web development software package to complete a course project.

Test of TAM

The Partial Least Squares (PLS) statistical analysis technique (Barclay et al., 1995) was used to test TAM in this context. Each construct was measured with a minimum of three questionnaire items, with the exception of the Social Factors construct. Social Factors was measured with one item ('my instructor/boss supports my use of computers'). The maximum number of measures was seven, for Expertise. A t-test for differences between samples was conducted; Table 1 shows the results for Social Factors, Motivation and Intentions. Two measures of Intentions were more positive for the first sample (Access) than for the second.

The factor loadings for all items ranged from .54 to .95. The Fornell and Larcker measure of internal consistency (reliability) was calculated for each construct, and ranged from .74 to .94 (this measure can be interpreted similarly to Cronbach's alpha). Discriminant validity was also tested, and all measures were found to exhibit satisfactory reliability and discriminant validity.

Figure 1 displays the results of the test of TAM. The path coefficients and R^2 value enclosed in boxes are those obtained from the second (HomeSite) sample. From Figure 1 it can be seen that TAM explained about 26% of the variance in Intentions to use Access, and 29% of the variance in Intentions to use HomeSite. The path coefficients in the model were generally strong and in the direction hypothesized. The exception was the path from Ease of Use to Perceived Usefulness in the HomeSite sample, which was positive but not substantive (.10).

When the Social Factors and Motivation constructs were added as a possible influence on Intentions (Figure 2), the variance explained in Intentions increased to 47% (Access sample) and 35% (HomeSite sample). Also, the direct paths from Attitudes and from Perceived Usefulness were still positive, but were not substantive. The path coefficients decreased from .25 to .18 from Attitude to Intentions, and from .34 to .14 for Usefulness to Intentions (in the Access sample).

Table 1. Test of Differences Between Samples

		S1 Mean	S. D.	S2 Mean	S. D.	t-stat	p
Social Factors	SF1	3.2	1.7	3.3	1.8	0.1	.93
Motivation	MOT1	6.4	1.0	6.3	1.3	0.4	.66
	MOT2	6.5	0.9	6.3	1.2	1.1	.27
	MOT3	5.9	1.2	6.2	1.3	1.4	.17
Short Term Intentions	ST1	5.7	1.0	5.0	1.9	2.9	.00
	ST2	6.0	1.2	5.5	1.8	2.0	.04
	ST3	5.4	1.2	5.0	1.9	1.3	.17

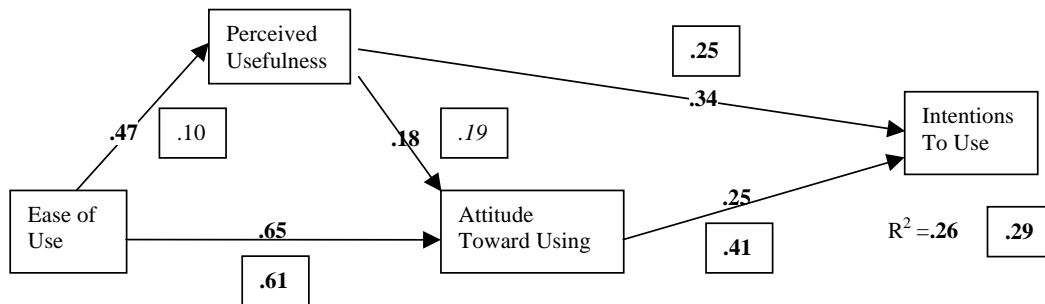


Figure 1. Test of Subset of TAM

constructs, and the direct paths from Usefulness and Attitude to Intentions remained relatively strong (.21 and .34, respectively). As an aside, a third model was tested with the Access sample that only included Social Factors and Motivation as providing an influence on Intentions. This very restricted model explained 41% of the variance in Intentions. Note that the items measuring Motivation related to completion of the task, and not to use of the software tool (e.g., 'It is important to me to do well on this project').

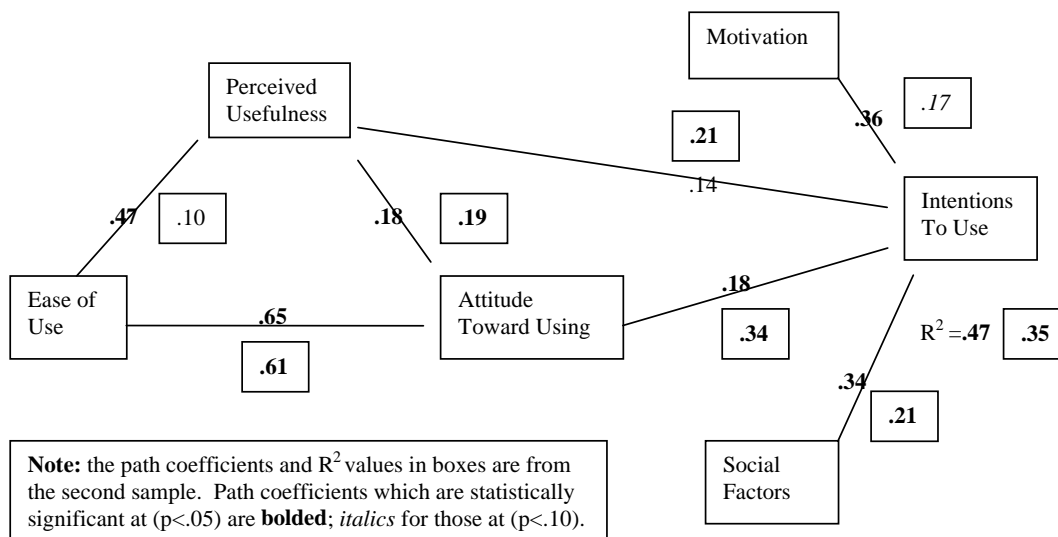


Figure 2. Motivation and Social Factors Added

base system using the Access Database Management System (DBMS), and to complete an extensive written report; the two components (the prototype and the report) were weighted equally in determining the overall grade for the project. Many, but not all, of the students had the Access software package available on their own computers. Those who did not own the software had ready access to it in a computer lab.

In contrast, the paths from Social Factors and Motivation were both strong (.34 and .36 for the Access sample, respectively). In the HomeSite sample the improvement in the model was not as pronounced. The amount of variance explained only increased from .29 to .35 with the inclusion of the two additional con-

Discussion

The first sample of respondents was composed of junior level undergraduate Business students who were completing a required course in Management Information Systems (MIS). As part of the requirements for the course, the students worked in groups of 2 on a major semester project. The group project was worth 20% of their final course grade. The students were asked to develop a small prototype data-

The second sample was obtained from first-year students completing a required course titled Information Technology and Management. As part of the requirements of the course, the students were asked to develop a personal Web site. The Web project counted for 10% of their final course grade. The students were given instructions on how to download the HomeSite 2.5 Web development tool, as well as minimal instruction on its use.¹ Only a small number of the students had developed a Web site previously; none had experience with HomeSite. The majority of the students owned computers (a requirement of the Business school), and these were connected through a network to the Internet. Those students without computers had reasonable access to a lab with similar computing facilities.

Approximately ten days before the final projects were due, the research questionnaire was administered to the students. A total of 64 students were given the Access questionnaire, and 95 students were given the HomeSite questionnaire. No incentives were offered for participating in the study. The students were told that their participation was voluntary, and they were also assured of confidentiality of responses. All 64 students completed the Access questionnaire, and 87 students agreed to participate in the HomeSite study. In the Access study, 63 questionnaires were usable, while in the HomeSite study 5 questionnaires were incomplete, leaving 82 usable responses.

To help explain the differences in observed results, a t-test of means was conducted for all measurement items. It was discovered that (1) there were no differences in Ease of Use, Motivation, or Social Factors; (2) the Access respondents had higher perceived Usefulness, their Attitude toward using was not as positive, but their Intentions to use in the short term were stronger.² This could be explained by noting that the students completing the Web project had access to other Web development tools, including Microsoft's Front Page Editor. In this context, the strongest direct influence on Intentions to use was Attitude toward using.

The students responding to the Access questionnaire could only use Access to complete the project. There was variation in Intentions to use Access, however, since in some groups one student focused more on the Access portion of the project, while the other group member focused on the written report. The results from this sample suggest that, in situations where individuals have limited options (either use a tool to complete a specific task, or not), the Motivation to complete the task exerted a stronger influence on Intentions to use the tool than any of the three antecedent constructs from TAM. Similarly, Social Factors (such as support from superiors) also exerted a stronger influence.

From this test we can conclude that it is necessary to expand the Technology Acceptance Model under certain circumstances. Although only two additional constructs were tested in this study, it is quite likely that further constructs might also provide substantial increased explanatory power. The challenge for future research is to identify which constructs and relationships are important under varying conditions.

References

Available from the author upon request (ron.thompson@uvm.edu).

¹At the time of the project, HomeSite 2.5 was available on a free trial basis for a limited time. Those students wishing to continue using the package were required to purchase it.

²Although the subjects were required to complete a prototype using Access as part of the requirement for their project, there was considerable variance in the Intentions measures. Since the project was completed in groups of two, some groups divided the tasks in that one member concentrated more on the Access prototype and the other focused more on the written report.