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The Influence of External Variables on Information Technology Usage Behavior

Geoffrey S. Hubona
Department of Information Systems
Virginia Commonwealth University
Richmond, Virginia, U.S.A.
Internet: ghubona@cabell.vcu.edu

Elizabeth Kennick
Information Technology Division
Morgan Stanley, Inc.
New York, New York, U.S.A.
Internet: kennick@morgan.com

Abstract

The Technology Acceptance Model (TAM) predicts the user acceptance of end-user applications by specifying causal relationships among external variables, belief and attitudinal constructs, and actual usage behavior. Although the perceived usefulness and perceived ease of use constructs have received much recent attention in the MIS literature, few studies have attempted to validate the full TAM model with all of the original constructs. Furthermore, the many published TAM studies are characterized by the use of different measurement factors to assess the belief constructs. This study validates TAM using the original constructs and assesses the effects of TAM variables on two measures of usage behavior. Results are largely consistent with previous TAM studies. However, the impact of external variables is not fully mediated by the TAM constructs.

1: Introduction

The Technology Acceptance Model (TAM) predicts the user acceptance of end-user applications by specifying causal relationships among select belief and attitudinal constructs that mediate the influence of external variables on usage behavior. Although the perceived usefulness and perceived ease of use constructs have received considerable recent attention in MIS literature [1] [8] [9] [10] [11] [12] [24] [25] [35] [36] [39] [41] [42], very few studies have validated TAM using all original belief and attitudinal constructs. TAM asserts that the principal influence of beliefs is *on attitudes* that subsequently impact user behavior. To the authors' best knowledge, the attitudinal construct, which is pivotal to the theoretical basis for TAM, has been utilized in only two previous studies [9] [10].

Further, the role of *external variables* vis a vis TAM has not been well explored. Davis [10] called for (p.483): "future research [to] consider the role of additional [external] variables within TAM." This study extends and refines previous related research by addressing these points. The specific objectives of this study are: (1) to validate TAM using the original belief and attitudinal constructs; and (2) to examine the direct and indirect influences of select external variables on usage behavior.

2: Theory and background

Fishbein and Ajzen's [19] [20] Theory of Reasoned Action (TRA) and Davis' [8] [9] [10] Technology Acceptance Model (TAM) provide theoretical contexts for measuring beliefs in order to predict future behaviors. TAM is an adaptation of TRA that is specific for modeling user acceptance of information systems. TAM suggests that two particular beliefs, *perceived usefulness* and *perceived ease of use*, are of central relevance for predicting computer user acceptance behaviors. Figure 1 illustrates the TAM model [10].

TAM asserts that the influence of external variables upon user behavior is mediated through user beliefs and attitudes. *Beliefs* connote a degree of instrumentality tied to an action whereas *attitudes* are purely affective. Beliefs relate to an individual's subjective assessment that performing some behavior will result in a specific consequence, whereas attitudes relate to an individual's positive or negative affective feelings about performing the behavior. *Perceived usefulness* and *perceived ease of use* are both belief constructs. Davis *et al.* [11] defined *perceived usefulness* as "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context" (p. 985). *Perceived ease of use* is "the degree to which the prospective user expects the target system to be free of effort" (p. 985).

Davis [9] [10] originally developed the TAM constructs and validated the model in: (1) a field study assessing the self-reported usage of PROFS electronic mail and XEDIT file editor applications; and (2) a lab study of the intended usage of Chart-Master and Pendraw graphic systems. Adams *et al.* [1] replicated Davis' original work in field studies on the usage of: (1)

electronic and voice mail; and (2) the WordPerfect, Lotus 1-2-3, and Harvard Graphics applications. Hendrickson *et al.* [25] examined the test-retest reliability of the *perceived usefulness* and *perceived ease of use* scales with undergraduate students using Lotus 1-2-3 and Paradox 3.5 applications. Subramanian [41] assessed the impact of the *ease of use* and *usefulness* constructs in predicting the future usage of voice mail and customer dial up systems.

Each of these studies and others [12] [35] have demonstrated the reliability and validity of the psychometric properties that characterize the *usefulness* and *ease of use* constructs. However, the specific questionnaire items (or factors) used to assess each of these two latent constructs have not been consistent across these studies. As noted by Segars and Grover [39, p.525]: "determining the structure of psychological constructs such as 'ease of use' and 'usefulness' is a complex activity . . of critical importance in accurately explaining levels of usage . . [and that] no absolute measures for these constructs exist across varying technological and organizational contexts." Generally, the number of specific factors used to measure each construct has been reduced, and the mix of factors for each construct has been altered. Davis' [9] [10] original instrument (see Appendix) contained ten items for each of the *usefulness* and *ease of use* constructs and five items for the *attitude toward using* construct. In addition, *attitude toward using*, a key theoretical construct of TAM with roots in the Theory of Reasoned Action (TRA) [2] [19] [20], has not been measured at all, exclusive of Davis' studies [9] [10].

Poor theory development [15] [32] and the inadequate or inconsistent measurement of constructs related to user perceptions of information technologies have been extensively reported in the literature. Many authors have noted the problems of using inconsistent instruments, including Ives and Olson [28]; Jarvenpaa, Dickson and DeSanctis [30]; and Benbasat [4], among others. As noted by Moore and Benbasat [36], IS research requires a cumulative tradition that must be based on a shared set of definitions, topics and concepts. Many IS studies have focused on instrument development for IS research [3] [14] [16] [29], and a large number have specifically investigated the *perceived usefulness* and *perceived ease of use* constructs.

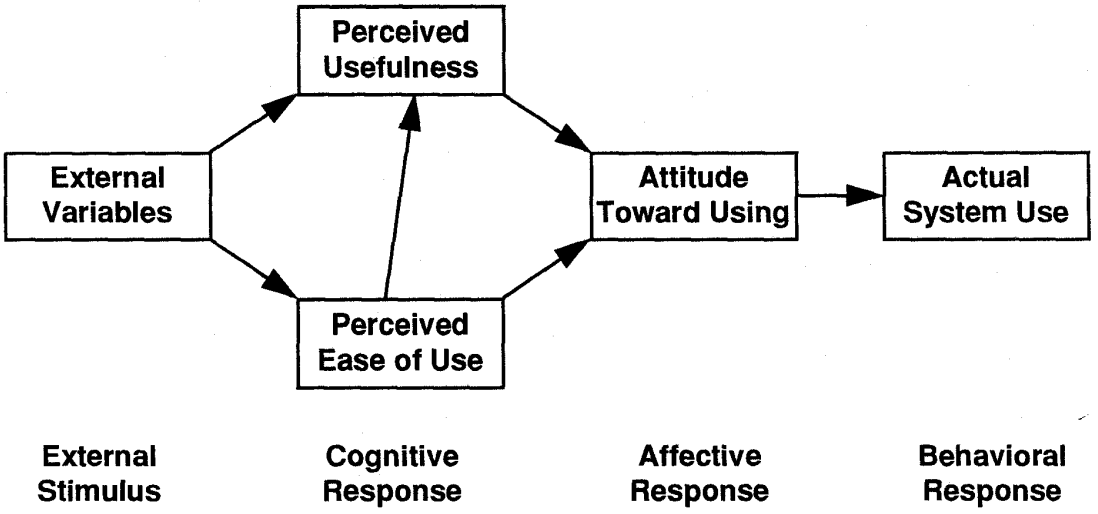

Figure 1: Technology acceptance model.

3: Research method

3.1: Subjects and procedure

Subjects were 106 staff and professional employees of a large public corporation in the mid-Atlantic states. They were selected on the basis of their regular use of a corporate local area network (LAN) that supported the target applications. A questionnaire (see Appendix) solicited their beliefs and attitudes about two different Microsoft®-windows-based end-user applications, cc:Mail electronic mail and Word for windows word processing software. Of the 106 subjects, 96 had used the electronic mail package and 95 had used the word processor, for a total of 191 usable responses.

3.2: Constructs

This study empirically examines relationships among eight measured variables (see Figure 1). There are three *external variables*, including users': *age*; *level of education*; and organizational *employment category* (staff support, technical professional, managerial professional, and executive). The rationale for selecting these particular external variables is explained below. *Usefulness* and *ease of use* are measured with Davis' [9] [10] original ten-item Likert-type scales (see Appendix). *Attitude toward using* is measured with 7-point semantic differential rating scales as suggested by Ajzen and Fishbein [2] and used by Davis [10] (see Appendix). Two measures of *actual system use* are separately assessed. *Usage frequency* is measured as how many times per week the respondent reported using the application. *Usage volume* is measured as how many hours per week the respondent reported using the application.

Previous studies have linked these three *external variables* to computer usage behavior. Zmud [44] documented that demographic variables including *age* and *level of education* influence the successful use of computer applications. Czara *et al.* [6] found that computer skills were more easily learned by younger subjects than by older subjects. Gomez *et al.* [21] reported high positive correlations of age with the amount of time that untrained users needed to make editing changes using a line editor. Egan and Gomez [17] suggested that older people have more difficulty generating syntactically complex commands. Greene *et al.* [22] found that age substantially contributed to the amount of errors made in information search.

Higher levels of education have been empirically associated with enhanced computer abilities and with more favorable attitudes towards computers. Davis and Davis [13] reported that end users with more education significantly outperformed those with less education in a training environment. Several studies have reported that higher levels of education are negatively related to computer anxiety, and positively related to favorable computer attitudes [26] [27] [37]. Lucas [34] reported that less educated individuals have more negative attitudes towards information systems than do individuals with more education. Harrison and Rainer [23] stressed that overcoming negative attitudes is important in enhancing individual computer skill. They maintained that education and training are effective techniques to overcome negative attitudes towards computers.

Numerous studies have related the impact of experience to computer usage behaviors. Different *employment categories* entail distinct and different experiences, both with respect to job role and function, and with respect to the use of computer applications. Levin and Gordon [33] reported that subjects who owned computers were more motivated to become familiar with computers, and had more favorable attitudes towards computers, than did subjects who did not own computers. Dambrot *et al.* [7] reported that subjects who failed an assembly language programming course had significantly less computer experience than those who did not fail the course. In a text editing study by Rosson [38], experience was positively correlated with editing performance. Elkerton and Williges [18] reported that experience explained more variance in information search times than did other individual variables studied. Experience has been demonstrated to have a large effect on performance with a specific system [17] [40].

3.3: Construct measurement and validation

The survey questionnaire measured three distinct latent constructs: (1) *perceived usefulness*; (2) *perceived ease of use*; and (3) *attitude toward using*. A confirmatory factor analysis was performed on the sample (N = 191) of collected questionnaires to assess the construct validity of the instrument with this particular user population. The sample data for the two applications (cc:Mail and Word for Windows) was combined to be consistent with the analysis approach used in previous studies [9] [10] [41]. In all cases, factors were extracted using covariance matrices and the method of principal components. An oblique rotation was used to help interpret the initial factor patterns. Generally, the factor loadings (see Table 1) provide evidence for the factorial validity of the three scales. However, the factor loadings for item Q11, the first 'reversed' item (see Appendix), were significant with respect to both the *ease of use* and *attitude* constructs. The remaining reversed items (Q13, Q15, Q17 and Q19) significantly loaded on a single construct, *ease of use*. It may be that some respondents were confused by the initial reversed format, but then recovered when responding to the remaining reversed items. However, Cronbach's alpha for the combined data is 0.97 for usefulness, 0.94 for ease of use, and 0.95 for attitude toward using, reflecting high levels of construct reliability.

A pre-questionnaire solicited respondents' *ages*, *levels of education*, and *employment categories*. Two questions solicited information about levels of *usage frequency* and *usage volume* for that application. Reported ages ranged from 20 to 60. Levels of

education were recorded as: (1) high school graduate; (2) some college; (3) two-year associate's degree; (4) bachelor's degree; (5) some graduate school; (6) master's degree; and (7) doctoral degree. Subjects indicated their employment categories from among four choices: (1) staff support; (2) technical professional; (3) managerial professional; and (4) executive. Usage frequency was recorded as: (1) don't use at all; (2) use less than once a week; (3) use about once each week; (4) use several times each week; (5) use about once each day; and (6) use several times each day. Usage volume was measured by the response to the following question: "Please specify (estimate) how many hours each week you normally spend using cc:Mail (or MS-word): _____ hours." Both of these usage metrics are similar to those used by Davis [10].

Table 1: Factor loadings of questionnaire items.

Item Number	Perceived Usefulness	Perceived Ease of Use	Attitude Toward Using
Q1	**0.84**	- 0.04	0.04
Q2	**0.90**	- 0.08	0.03
Q3	**0.75**	0.07	0.19
Q4	**0.82**	0.06	0.02
Q5	**0.83**	0.02	0.13
Q6	**0.96**	0.04	- 0.05
Q7	**0.95**	0.01	- 0.03
Q8	**0.85**	0.00	0.09
Q9	**0.84**	0.05	0.06
Q10	**0.66**	0.09	0.27
Q11	0.10	**0.54**	**0.55**
Q12	0.08	**0.80**	- 0.02
Q13	- 0.02	**0.66**	0.26
Q14	0.08	**0.62**	0.30
Q15	- 0.05	**0.54**	0.41
Q16	0.17	**0.72**	- 0.12
Q17	- 0.01	**0.90**	0.18
Q18	0.12	**0.80**	- 0.02
Q19	0.12	**0.95**	- 0.19
Q20	0.04	**0.57**	0.45
Q21	0.20	0.02	**0.72**
Q22	0.16	- 0.21	**0.81**
Q23	0.14	- 0.01	**0.83**
Q24	0.23	- 0.02	**0.76**
Q25	0.17	0.02	**0.80**

The raw data for age and employment category was linearly transformed to fit a measurement scale in the same range as the belief and attitudinal measurement scales. The raw data for usage volume responses exhibited a right-skewed distribution and was rescaled by computing natural logarithms to create a more symmetric distribution. A linear transformation was then performed on the rescaled usage volume data to give it the same range as the other measured constructs.

4: Results

The questionnaire data was analyzed using LISREL VII. The purpose of the analysis was to assess the measurement and structural aspects of TAM *with* and *without* the introduction of the external variables. LISREL 'modification indices' were utilized to incrementally adjust the model so as to maximally improve overall goodness of fit. Modification indices indicate which additional (missing) link, or path, in the structural model should be added so as to reduce the chi-square value for the model by the maximum amount. Note that large chi-square values correspond to poor overall fit and small chi-square values to good fit. Thus, LISREL modification indices permit incremental model building so as to explore the structure of alternative models that better explain the overall fit of the model. In this study, four alternative models are compared: (1) the TAM measurement model without external variables (e.g. referred to as 'original TAM'); (2) a revised TAM measurement model without external variables (e.g. 'revised TAM'); (3) the revised TAM measurement model with external variables (e.g. 'external variables'); and (4) a final TAM measurement model with external variables (e.g. 'revised external variables').

Figure 2 depicts the original TAM measurement model without external variables. The structure of this model is derived from the Technology Acceptance Model (Figure 1), except that *external variables* are omitted and *actual system use* is split into separate measures for *usage frequency* and *usage volume*. For each of the four predicted variables, the percentage of variance explained by the model is indicated above that measured variable. The values of the measured standardized path coefficients (e.g. *rho* values) are also indicated. Each of the five path coefficients in Figure 2 is statistically significant ($p < 0.005$).

Fit measures for the structural equations that test the path influences in the empirical research model are indicated in Table 2. The chi-square value of 73.52 ($p < 0.01$) indicates a lack of fit. The value of chi-square divided by five degrees of freedom is approximately 14.7, which is greater than cutoff value of 5.0 used by Adams *et al.* [1] and recommended by Wheaton, Muthen, Alwin and Summers [43]. As noted by Segars and Grover [39], the chi-square statistic is sensitive to large sample sizes with a large number of indicators,

such that trivial discrepancies between a model and data can result in significant chi-square values. Therefore, other measures of model fit such as chi-square divided by degrees of freedom, goodness of fit and adjusted goodness of fit indices, and root mean square residual should be considered [5] [31] [39]. In Table 2, the goodness-of-fit and adjusted-goodness-of-fit indices are close to recommended thresholds. The root mean square residual (RMSR) is less than the recommended threshold of 1.0.

Table 2: Structural fit measures for the original TAM.

	Recommended Values	Original TAM
Chi-Square	$p > 0.05$	73.52 ($p < 0.01$)
Chi-Square/DF	< 5.0	14.7
Goodness of Fit	> 0.90	0.88
Adjusted GFI	> 0.80	0.65
RMSR	< 1.0	0.23

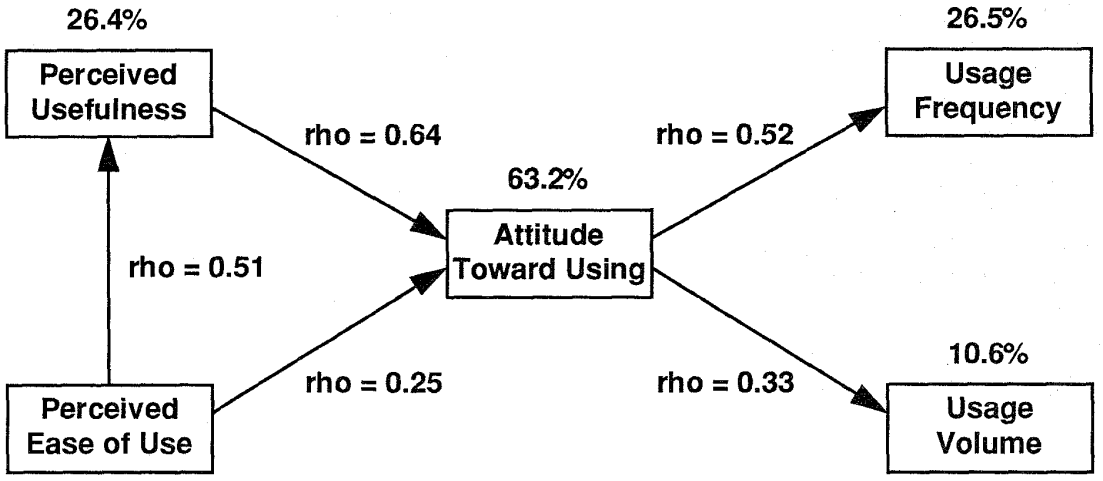

Figure 2: TAM measurement model (without external variables).

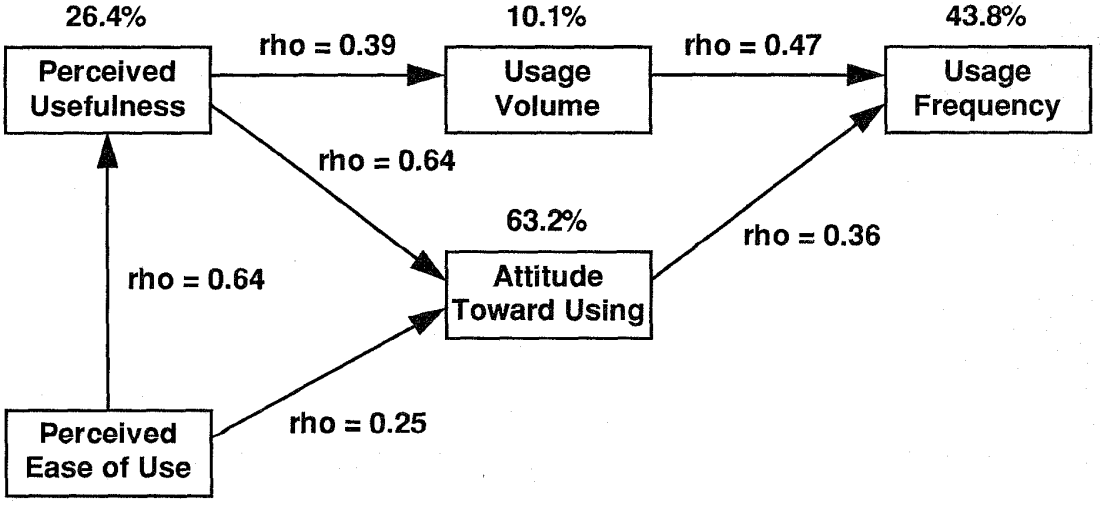

Figure 3: Revised TAM measurement model (without external variables).

Modification indices [31, p.45] are: "measures associated with the fixed and constrained parameters of the model. For each fixed and constrained parameter, the modification index is a measure of predicted

decrease in chi-square if a single constraint is relaxed and the model is reestimated . . . The fixed parameter corresponding to the largest such index is the one which, when relaxed, will improve fit maximally." In the original TAM model (Figure 2), modification indices indicate the need to add structural links *from perceived usefulness* to *usage volume*, and from *usage volume* to *usage frequency*. This revised TAM model is estimated as indicated in Figure 3. In this revised TAM model, the original link from *attitude toward using* to *usage volume* (see Figure 2) is not significant and is therefore deleted.

In Figure 3, all of the indicated standardized path coefficients are significant ($p < 0.005$). Notice that the percentage of explained variance in *usage frequency* has increased from 26.5% (Figure 2) to 43.8% (Figure 3). Structural fit measures for this revised TAM model (and for all succeeding models) are presented in Table 3. Rather than presenting absolute chi-square values, *p* values associated with chi-square are presented. Notice that the structural fit measures for this revised TAM model (column 3 in Table 3) are markedly improved over those for the original TAM model (column 2 in Table 3). In summary, this revised TAM model (without external variables) exhibits exemplary structural fit characteristics and predicts 10.1% of the variance in usage volume and 43.8% of the variance in usage frequency. But what happens when *external variables* are introduced?

Figure 4 extends the revised TAM model (from Figure 3) by introducing the influence of the three external variables for this study, *age* (e.g. 'age'), *employment category* (e.g. 'emp') and *educational level* (e.g. 'ed'). The LISREL analysis measures the direct influence of each external variable upon *ease of use* and *usefulness*. Only one of the three external variables had a significant influence: *age* exhibited a negative influence (rho = - 0.24) on *ease of use*. Each indicated standardized path coefficient is significant ($p < 0.005$). Notice that the percentages of *usage volume* and *usage frequency* variances explained by the model increased from 10.1% (Figure 3) to 14.9% (Figure 4), and from 43.8% (Figure 3) to 45.5% (Figure 4), respectively. The structural fit measures for this 'external variables' model (see column 4 in Table 3) are good.

Table 3: Fit measures for the structural models.

	Recommended Values	Original TAM (Figure 2)	Revised TAM (Figure 3)	External Variables (Figure 4)	Revised Ext. Var. (Figure 5)
Chi-Square	$p > 0.05$	$p < 0.01$	$p = .254$	$p < 0.01$	$p = .272$
Chi-Square/DF	< 5.0	14.7	1.33	3.38	1.18
Goodness of Fit	> 0.90	0.88	0.99	0.95	0.98
Adjusted GFI	> 0.80	0.65	0.96	0.86	0.94
RMSR	< 1.0	0.23	0.03	0.13	0.08

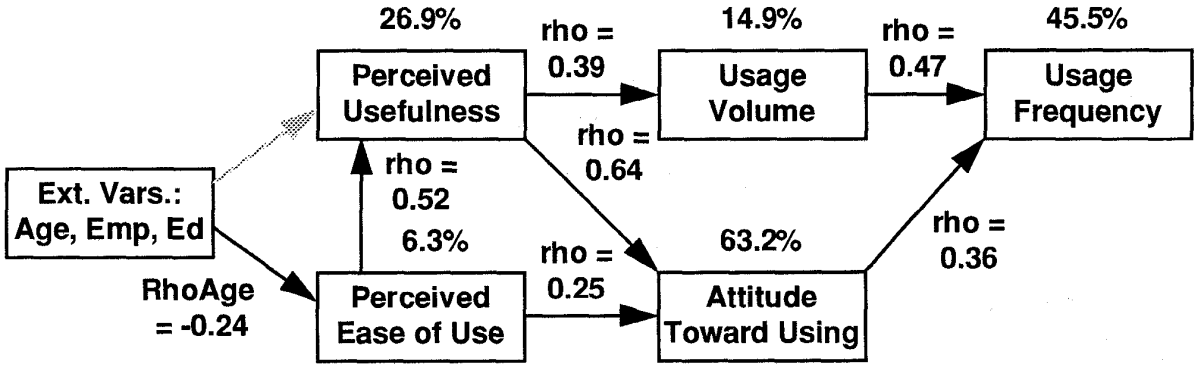

Figure 4: Revised TAM measurement model (with external variables).

The modification indices computed by LISREL for this initial 'external variables' model suggested that *employment category* and *educational level* had direct influences on *attitude toward using*, and *usage frequency*, respectively. Figure 5 presents the LISREL measurement results with these structural links added.

All indicated standardized path coefficients are significant ($p < 0.005$). The percentage of *usage frequency* variance explained by the model increased from 45.5% (Figure 4) to 50.5% (Figure 5). The structural fit characteristics of this 'revised external variables' model (see column 5 in Table 3) are excellent.

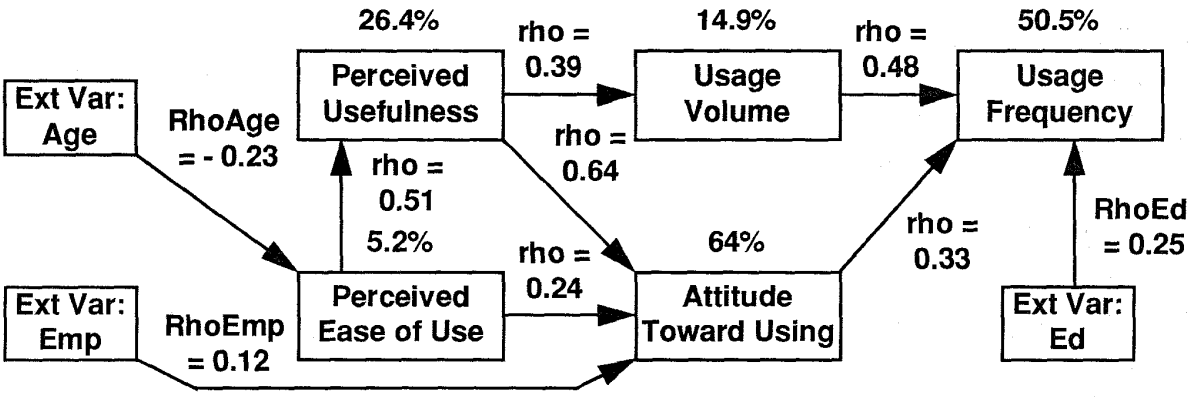

Figure 5: Final TAM measurement model (with external variables).

5: Discussion

In terms of the original TAM belief and attitudinal constructs and their empirical relationships to usage, this study largely confirms the findings of previous studies. Davis' [9] original study reported *ease of use* to be a causal antecedent of *usefulness* which, in turn, significantly affects *usage*. Subsequently, Davis [10] reported *ease of use* to have a direct effect on *usefulness*, and a smaller effect on *attitude*. Davis [10] also reported that *usefulness* had an expected, significant effect on *attitude*, and an unexpected and yet significant effect, on *usage*. The findings of our study are similar. *Ease of use* has a direct effect on *usefulness* and a smaller effect on *attitude*. *Usefulness* has a direct effect on *attitude* and a smaller effect on *usage volume*.

Table 4 presents all standardized path coefficients (excluding those linking *external variables* to TAM variables) from the four alternative models. The comparative magnitudes of corresponding path coefficients across the four examined models (e.g. the values in any one row in Table 4) are unchanged. Thus, revising the structural model to improve overall fit, and introducing external variable influences, did not change the relative magnitudes of influence of the predictor upon the predicted variables.

However, revising the model to improve overall fit, and introducing external variables, did impact the relative proportions of *usage frequency* and *usage volume* variances explained. This finding is important because the purpose of TAM is to predict the user acceptance of new information technologies, specifically by predicting user behaviors with those technologies. Thus, models that explain, or account for, larger proportions of usage behavior are inherently more valuable. Table 5 shows the percentages of explained variances, for each of the predicted TAM variables, from the four alternative models. Note the constant percentages of *usefulness*, *ease of use* and *attitude* explained by the four models. However, the models explain larger proportions of 'how often' (*usage frequency*) the application is used as they are revised to improve overall fit. That is, the relative percentages of *usage frequency* explained increases noticeably as the 'original TAM' model is revised to improve fit (e.g. Figure 2 to Figure 3), and then again as the initial 'external variables' model is revised (e.g. Figure 4 to Figure 5). Furthermore, the relative percentages explained of 'how much' (*usage volume*) the application is used increase sharply when the influences of the external variables are first introduced (e.g. Figure 4). These findings suggest that 'fine-tuning' the structural characteristics of the model helps to better explain 'how often' an application is used, whereas introducing the influence of external variables in the model helps to explain 'how much' it is used.

The results of this study suggest the need to further examine the role that *external variables* play in predicting usage behaviors. The results of this study suggest that *external variables* do influence usage behavior while demonstrating that the belief constructs do not fully mediate this influence on usage behavior.

Table 4: TAM measurement model standardized path coefficients ($p < 0.005$).

Measurement Path	Original TAM (Figure 2)	Revised TAM (Figure 3)	External Variables (Figure 4)	Revised Ext. Var. (Figure 5)
PEOU to PUSE	0.51	0.51	0.52	0.51
PUSE to ATT	0.64	0.64	0.64	0.64
PEOU to ATT	0.25	0.25	0.25	0.24
PUSE to VOL	N.A.*	0.39	0.39	0.39
ATT to FREQ	0.52	0.36	0.36	0.33
ATT to VOL	0.33	N.S.**	N.S.**	N.S.**
VOL to FREQ	N.A.*	0.47	0.47	0.48

* N.A. means 'not assessed'.
** N.S. means 'not significant'.

Table 5: Percentages of variance explained for predicted TAM variables.

Predicted Variable	Original TAM (Figure 2)	Revised TAM (Figure 3)	External Variables (Figure 4)	Revised Ext. Var. (Figure 5)
Usefulness	26.4 %	26.4 %	26.9 %	26.4 %
Ease of Use	N.A.*	N.A.*	6.3 %	5.2 %
Attitude	63.2 %	63.2 %	63.2 %	64.0 %
Usage Frequency	26.5 %	43.8 %	45.5 %	50.5 %
Usage Volume	10.6 %	10.1 %	14.9 %	14.9 %

* N.A. means 'not applicable'.

For emerging information technologies to be used effectively in an organizational setting, our findings suggest the importance of a fit between technology and task and between individual characteristics and the technology. The crux of *perceived usefulness* relates to the *functionality* of the application as enabling and expediting task-related job performance. After an initial period of using a new application, a user derives an opinion with respect to whether that system actually promotes his efficient and effective job performance. Thus, to be perceived as useful, the functionality of the application must enable the user to accomplish job-related tasks. However, the perceived usefulness of an application is also promoted by the lack of difficulty (e.g. *perceived ease of use*) in using that application. For the individual to find an application as easy to use, there must be some consistency between the action language (e.g. what the user can do to the application) and the presentation language (e.g. how the application communicates to the user). Clearly, standardized user interfaces promote ease of use, but training and education are also important, as are other individual variables (e.g. age, gender, intrinsic cognitive skills) that are not influenced so easily.

Our findings validate the notion that beliefs and attitudes are instrumental in promoting the user acceptance of new information technologies. But external variables, both individual and organizational, are also an important consideration with respect to the process of adopting new information technologies. Both the indirect and the direct effects of these external variables on user behavior must be considered.

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7: Appendix

NETWORK APPLICATIONS USER QUESTIONNAIRE - CC:MAIL ELECTRONIC MAIL

Subjects responded to the following twenty (*perceived usefulness* and *perceived ease of use*) questions on a Likert-type scale ranging from one (strongly disagree) to seven (strongly agree):

1. Using cc:mail improves the quality of the work I do.
2. Using cc:mail gives me greater control over my work.
3. Cc:mail enables me to accomplish tasks more quickly.
4. Cc:mail supports critical aspects of my job.
5. Using cc:mail increases my productivity.
6. Using cc:mail improves my job performance.
7. Using cc:mail allows me to accomplish more work than would otherwise be possible.
8. Using cc:mail enhances my effectiveness on the job.
9. Using cc:mail makes it easier to do my job.
10. Overall, I find the cc:mail system useful in my job.
11. I find the cc:mail system cumbersome to use.
12. Learning to operate the cc:mail system is easy for me.
13. Interacting with the cc:mail system is often frustrating.
14. I find it easy to get the cc:mail system to do what I want it to do.
15. The cc:mail system is rigid and inflexible to interact with.
16. It is easy for me to remember how to perform tasks using the cc:mail system.
17. Interacting with the cc:mail system requires a lot of mental effort.
18. My interaction with the cc:mail system is clear and understandable.
19. I find it takes a lot of effort to become skillful at using cc:mail.
20. Overall, I find the cc:mail system easy to use.

Subjects responded to the following five (*attitude toward using*) questions by marking an "X" in the center of one of the seven places indicated for each question:

21. All things considered, my using cc:mail in my job is:

bad	_____ :	_____ :	_____ :	_____ :	_____ :	_____ :	_____	good
	extremely	quite	slightly	neutral	slightly	quite	extremely	

22. All things considered, my using cc:mail in my job is:

foolish	_____ :	_____ :	_____ :	_____ :	_____ :	_____ :	_____	wise
	extremely	quite	slightly	neutral	slightly	quite	extremely	

23. All things considered, my using cc:mail in my job is:

unfavorable	_____ :	_____ :	_____ :	_____ :	_____ :	_____ :	_____	favorable
	extremely	quite	slightly	neutral	slightly	quite	extremely	

24. All things considered, my using cc:mail in my job is:

harmful	_____ :	_____ :	_____ :	_____ :	_____ :	_____ :	_____	beneficial
	extremely	quite	slightly	neutral	slightly	quite	extremely	

25. All things considered, my using cc:mail in my job is:

negative	_____ :	_____ :	_____ :	_____ :	_____ :	_____ :	_____	positive
	extremely	quite	slightly	neutral	slightly	quite	extremely	