

Developing a Model of Technology Behavior Intension on Strategic Web Resource

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Abstract: - The purpose of this study was to develop senior high school students' awareness of Technology strategic usefulness of Web-search. Nonequivalent pretest-posttest control group design was applied in the study. The research samples were one hundred and eleven students, with fifty-five of them as the experiment groups, and the other fifty-six as the other as control groups. Experiment groups accepted the teaching of "Technology Strategic Usefulness, TSU" material. On the other hand, the researcher just taught students in control groups ordinary uses of Web-search. After the experimental teaching, students took Web-search Logic Achievement Test and Technology strategic usefulness of Web-search Scale. Based upon the research findings, a model of technology behavior intension on strategic web resource was concluded.

Key-Words: - Technology behavior intension model, Strategic web resource

1 Introduction

Web searching services are now everyday tools for information seeking. A growing body of large-scale, quantitative or qualitative studies is exploring how users search the Web [1]. Web-based learning activities often involve information searching tasks, as web-based environment are connected with information sites worldwide. However, it appears to be difficult for Internet novice users to search information effectively and efficiently through the web [2].

Typically, students have already been using the Internet for some time, although largely for entertainment and peer-to-peer communications. Therefore, the shift in use represents an adaptation of an existing, well-known technology to change student perceptions regarding its strategic usefulness [3]. If students have no correct information searching strategies, they will get failure in searching on the web, and it may decrease students' intention to use web as strategic resource.

The purpose of this paper is to propose a hands-on assignment intended to enhance student awareness of technology strategic importance of web-search. At present, the assignment has been developed as a pilot initiative; however, a set of measures based on a modified version of the Technology Acceptance Model (TAM) has been used to gather preliminary data on its effectiveness in changing student internationality regarding future Internet use. Therefore, this study adopted TAM to test extensions of the Technology Acceptance Model (TAM) within the context of using the World Wide Web to gather and analyze technology information.

2 Theories and Model Development

The shift in use represents an adaptation of an exiting, well-known technology to change students' perceptions regarding its strategic usefulness. The dependent variable of user intention has been separated into two variables to explore (1) intent to use web-based technologies for gathering and analyzing technology information, and (2) increased understanding of web information content as strategic resource.

2.1 Technology Acceptance Model

Since its inception in 1989 (Davis), the Technology Acceptance Model (Figure 1) has proved to be a robust descriptor of two factors — perceived usefulness and perceived ease of use—leading to use acceptance of new technologies. Substantial theoretical and empirical support has accumulated in favor of the Technology Acceptance Model [4-5]. Numerous empirical studies have found that TAM (typically about 40%) consistently explains a substantial proportion of the variance in usage intentions and behavior [6].

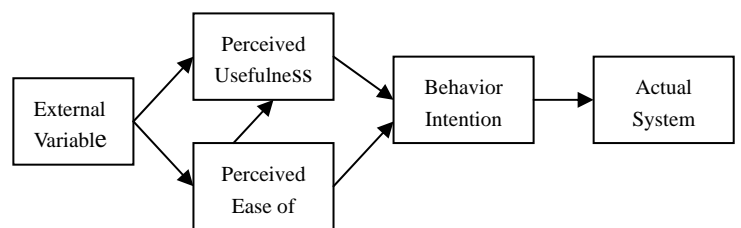


Fig 1 Technology acceptance model (Davis et al., 1989)

While this study uses extension of the TAM model as a theoretical basis for assessing the value of these assignments, it should be emphasized that in this case, the focus is not on pure technology acceptance.

2.2 Technology Strategic Usefulness

Wright & Granger [7] designed an experiment to test extensions of the Technology Acceptance Model (TAM) within the context of using the World Wide Web to gather and analyze financial information. Wright & Granger's result indicate that the relationship between usefulness and strategic importance was found to be highly significant; however, additional analysis indicated that strategic importance was a precursor rather than an effect of usefulness [7]. And they suggest that rigorous developing strategic importance as a component of user beliefs and intention to use, may enlarge our understanding of this process, perhaps increasing its effectiveness.

Given that these studies infuse TAM with a richer theoretical basis for understanding factors that might affect user adoption of a new technology, this study assesses a web-based training exercise, incorporating aspects of the previous research.

The experiment tests the following:

H₁ Increasing usefulness and ease of use perceptions leads to increases in the intent to use the Web as a tool for gathering and analyzing personal financial information.

H₂ Heightened usefulness perception of the Web as a tool for gathering and analyzing financial information also increases the perception of its value as a strategic business resource.

3 METHODOLOGY

The goal of the exercise was to both introduce students to various types of web-based tools that can be used to gather and analyze technology information and to convey the idea that such tools

can provide individuals and technology with a strategic advantage.

3.1 Research design

Nonequivalent pretest-posttest control group design was applied in the study. The researcher samples one hundred and eleven senior high school students, with fifty-five of them as the experiment groups, and the other fifty-six as the other as control groups. Experiment groups accepted the teaching of "Technology Strategic Usefulness, TSU" material. On the other hand, the researcher just taught students in control groups ordinary uses of Web-search. After the experimental teaching (six weeks), students took "Technology strategic usefulness of Web-search Scale".

3.2 Research tools

The research tools of the study contains "Technology Strategic Usefulness, TSU" material and "Technology strategic usefulness of Web-search Scale". Description as follows separately.

3.2.1 "Technology Strategic Usefulness, TSU" material

The researcher is according to document discussion, developing the experiment teaching materials. The experiment teaching materials includes single logic and Complex logic of Web-search. And using the experiment teaching materials intends to enhance experiment group's Perceived Usefulness.

3.2.2 Technology strategic usefulness of Web-search Scale

The research tool of this research revises the Scale from Wright & Granger [7]. The primitive survey questions have eight levels: Cognitive Absorption, Information Quality, Result Demonstrability, Personal Relevance, Perceived Ease of Use,

Perceived Usefulness, Behavioral Intent, and Strategic Importance. This research adopts four levels: Perceived Ease of Use, Perceived Usefulness, Behavioral Intent, and Strategic Importance.

An initial analysis of the instrument psychometric properties indicated acceptable levels of internal validity for the scales measuring perceived ease of use, usefulness, intention and strategic importance. Dropping these items substantially improved Chronbach alpha coefficients (Table 1).

Table 1 Scale reliabilities

Scale	Number of Items	Reliability
Behavioral Intention	3	.7276
Perceived Usefulness	4	.8058
Perceived Ease of Use	4	.7191
Strategic Usefulness	3	.7518

4 DATA ANALYSIS AND RESULTS

To gauge the effect of each variable individually, single variable regressions were conducted for each of variables on the corresponding TAM variable and on the independent variable of strategic importance. Multiple regressions were also conducted to ascertain the composite effect of the independent variables.

Hypothesis H₁, which posits ease of use and usefulness as antecedents of intention to use a given technology, is a straightforward application of the TAM in the context of using the web to gather and analyze technology information. The results indicated mixed support. Individually, both usefulness and ease of use were shown to be significant predictors of the intention to use the web (Table 2). The composite model was also highly significant (p < 0.001), with an R-squared of 0.576;

While the composite model was significant, it explained only 57% of the variation in behavior intention. These findings support hypothesis H₁.

The regression formula is $BI = 0.379 * PEU + 0.479 * PU$ (BI=Behavior Intention, PEU=Perceived Ease of Use, PU=Perceived Usefulness)

Table 2 Relationship of perceived ease of use, usefulness with intention to use

	Individual Variable Effects		Composite Model Effects	
		t		t
Perceived Ease of Use	.669	6.232***	.379	3.249***
Perceived Usefulness	.708	6.949***	.479	4.101***
Effect of Ease of Use on Usefulness	.604	5.252***		
				R ² = 0.576***

*p < 0.10 **p < 0.05 ***p < 0.01

However, the fourth hypothesis (H₂), that of usefulness as a pre-determinant of perceptions of strategic importance presented the most interesting findings. In multiple regression modeling usefulness, ease of use and strategic importance, the relationship between usefulness and strategic importance was found to be highly significant (Table 3).

The regression formula is $SI = 0.576 * PU + 0.040 * PEU$. (SI=Strategic Importance, PU=Perceived Usefulness, PEU= Perceived Ease of Use)

However, further analysis of the relationship between usefulness, strategic importance and behavioral intention indicated a fully mediating effect of usefulness on strategic importance (Table 4).

Table 3 Relationship of ease of use and usefulness with strategic importance

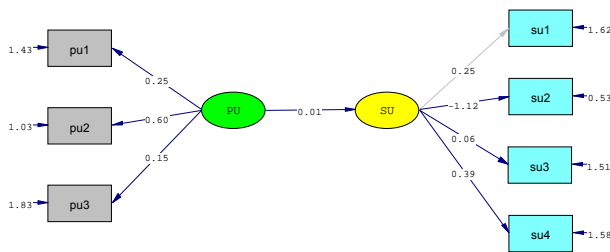
	Composite Model Effects	
	.	t
Usefulness	.576	3.936***
Ease of Use	.040	.272
		R ² = 0.334***

*p < 0.10 **p < 0.05 ***p < 0.01

Table 4 Relationship of ease of use and usefulness with strategic importance

	Composite Model Effects	
	.	t
Usefulness	.655	5.117***
Strategic Importance	.088	.686
		R ² = 0.485***

p < 0.05 *p < 0.01



Chi-Square=5.20, df=13, P-value=0.97052, RMSEA=0.000

Figure 2 Path diagram of perceived usefulness and strategy of usefulness

In figure, the chi-square value was 5.2 with degree freedom of 13 and the p value was 0.97052. Based upon these readings, the model fitted well [8].

5 DISCUSSION

In this study, we develop a teaching material to enhance student’s Perceived usefulness of using web-search engine. And a strategic understanding of a system’s usefulness may increase the intention to use web-search engine. But an ANOVA of the two groups did not find any significant differences for the TAM and strategic importance.

The importance of this study is to verify the relationship between the strategic importance, and usefulness. The anticipation was that usefulness

would be a pre-determinant of the perception of strategic importance; and the initial findings did indicate a significant relationship between the two. Similar assessments of strategic importance and the intention to use also detected a significant relationship. But additional analysis of the model with intention to use included as a third variable, provided unexpected results. While usefulness remained a significant antecedent of intention to use, strategic importance was no longer significantly. Clearly, usefulness mediated the relationship between perception of strategic importance and intention to use.

6 CONCLUSION

Given that the study was largely a replication of prior research involving a different application of technology; the findings strongly support Wright & Granger’s result of research.

The following model depicts the original Technology Acceptance Model relationships and the proposed extensions for strategic importance variables (Fig 3).

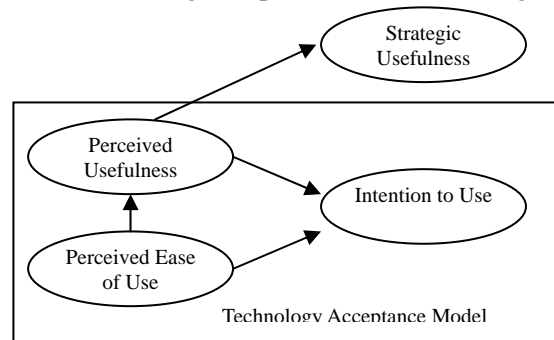


Fig 3 Research Structure

Nevertheless, the findings regarding strategic importance as an antecedent of usefulness, is an important finding with interesting implications for practical applications. As learning move towards distributed information technologies, such as materials search engine or web search engine, a strategic understanding of a system’s usefulness could possibly mediate a reluctance to use a

system—particularly if it appears that personal productivity may suffer. If this is the case, training interventions that emphasize the strategic importance of a particular technology could be developed to overcome personal reluctance, thereby improving user acceptance. Therefore, to heighten student's Perceived Usefulness of web-search may enlarge our understanding of this process, perhaps increasing strategic importance and intention to use of using web-search technology.

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