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An Analysis of the Blog-User' Attitude Employing Structural Equation Modeling Combine TAM and IDT Model

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Abstract

This paper examines key motivators for consumers' attitude towards continuing the reception of existing blog services. Multiple theoretical perspectives are synthesized to hypothetically construct a model of continuance behavior, which is then empirically tested using a field survey of online blog users, and Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) are the study's theoretical bases. The study uses Structure Equation Modeling (SEM) and Importance-Performance Analysis (IPA), and analyzes blog users and the 900 samplings were effectively taken as a result. In addition this thesis also analyzes importance and performance perceived by sampled users in blogs' functions, and gives some suggestions for blogs' vital functions in the future.

Two different analysis methods are used in this study: SEM and IPA. Salient results include: (1) blog's usefulness, ease of use, trialability, and observability are positively affecting users' attitude, (2) Base on Importance-Performance Analysis, if the interface is smooth, and it provides multiplicity and uploading functions belonged to quadrant 1, (keep up the good work), and (3) the most important blogs' future functions is sharing resources between blogs associated with quadrant 1, (keep up the good work). Implications of these results for practice and research are provided as result. Finally, the result of this study is expected to serve as a useful guideline for Internet service providers and future research.

Keywords: Blog, Technology Acceptance Model, Innovation Diffusion Theory, Structure Equation Modeling, Importance-Performance Analysis

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1. Introduction

1-1 Research Background and Motivation

Blogs first appeared less than ten years ago but the information explosion has caused their usage to grow exponentially. Blogs are in use throughout the world and have become a tool of the masses. The last decade has also seen much importance placed on blog research. Because of this rapid growth, many people simply do not understand what blogs are, or how they are used. Four million blogs could be found on the Internet five years after they first appeared in 1999. However, by December 2007 the blog search engine Technorati (<http://technorati.com/>) was tracking more than 112 million different blogs. According to these data, the effect on the traditional media and publishing must be very great.

Taiwan now has its own blog platforms, such as Wretch, Yahoo, PIXNET, Xuite and others. From June 21 to 22, 2007, a study by InsightXplorer of Internet blogger behavior in Taiwan provided 4717 effective samples from http://www.insightxplorer.com/news/news_09_21_07.html. About 70% of respondents have blogs and 44.8% regularly update them. Wretch and Yahoo accounted for the majority of managed blogs (68.2%) and Xuite, Yam and Windows Live Space were the “second string” of the top five Blog platforms. The motive expressed by the majority of the users were “the use of words and pictures to record their lives” (72.6%) and to “reflect one's feelings and express ideas” (69.6%). 44.8% (N=3215) of the users who regularly updated their Blogs did so every week. We can see from these data the degree and frequency of Blog usage.

Study motivates that in our changing technological environment, the World Wide Web plays a very important part. This fast developing technology has made it possible for people to interact in ways that were impossible before. This phenomenal increase in the exchange of ideas between people has many perspectives that can be investigated. This study explores the phenomenon of the Blog in Taiwan. This is a worthwhile pursuit that gives us much food for thought. How can it be possible for 112 million blogs to be created in under 10 years? The study also explores the attraction blogging has for the user and also attempts to make some suggestions that might help Blog providers improve their services.

1-2 Research Purposes and Question

As we refer to TAM and IDT's references, we can find that many references were not combining TAM and IDT in their studies, and when we find it that IDT's observability, trialability, and compatibility are not in this study. Therefore, the study employs structural equation modeling and combine TAM and IDT model to analyze blog using attitude, and employs IPA to explore blog importance and performance. Further study, we explore the importance of blog future



functions, and expect providing the references to academia and servicers.

According to the research objectives of this study, the questions are:

- a. To explore the factors that can affect the attitude of blog users using by TAM and IDT analysis.
- b. To design an IPA, and examine the conditions under which Blog functions are used.
- c. To uncover the factors that affect user attitude towards providers and encourage them to develop better functions from an examination of this information and then motivate the user to adopt the innovative technology.

2. Literature review

2-1 Blog

M. -W. Dictionary, and H. Hewitt (2007) mention that Blogs first appeared in 1999 with the object of commenting on politics, and it certainly caused an increase in campaign funding for many candidates. Blogs attracted immediate attention once they had been introduced into politics and these “Poliblog” commentaries had a tremendous influence on elections.

S. -I Todoroki, T. Konishi, and S. Inoue (2005) said that blog-based research notebook enables us to manage all the personal information electronically, which was formerly recorded in our paper-based notebooks. This service requires user authentication function in a user-installed server and infrastructure for “blogging anytime, anywhere”. Once these are satisfied, the blog acts as a personal informatics workbench; a gateway to all the information needed which is traceable and retrievable. Although some existing knowledge-sharing systems also have electronic notebook service as their front-end, the present and existing notebooks should be properly used depending on the purpose, managing personal information or promoting knowledge-sharing.

The growth of Weblogs, also abbreviated to blogs, on the Internet has been phenomenal. Originally an online writing tool that helped its users keep track of their own online records, the blog quickly turned into a key part of online culture. The method provides an easy way for an average person to publish material of any topic he or she wishes to discuss in a web site. With a popular issue, a blog can attract tremendous attention and exert great influence on society. (C. -L. Hsu and Judy C. -C. Lin, 2008).

As shown on Figure 1 When we post articles on the Internet we can choose how they will be classified. Many Blog applications will actually allow the choice of any type of classification and the Blogger need not worry about choosing the type of Blog either. It is only necessary choose whatever type and style of Blog interface you like. Readers can also choose their favorite articles



using these classifications.



Figure 1. Articles' classification of Wretch

Source : Wretch, 2009.04.06: <http://www.wretch.cc/blog/>

2-2 Technology Acceptance Model, (TAM)

The Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and Technique Acceptance Model (TAM) are useful theories for investigation and examination of acceptance and adoption within the technical domain.

Because the goal is a concise and accountable theory, TAM is a model most likely to provide an account of this information technology needed by the user (M. -J. Tsai, 2007) but TRA and TPB are used on many Tessitura domains. However, only TAM is formally oriented towards the information technology domain. TAM was designed to explain the determinants of user acceptance of a wide range of end-user computing technologies (Davis, 1986). This study will focus on the User's attitude towards Blogs using TAM and then will use the same references for a treatment of the Blog problem.

Research in 1986 by Davis led to the introduction of the formal concept of TAM. The theory was developed from basic TRA as a way to examine relationships such as perception and emotional factors in the use of techniques. It is hoped this model can be generally applied to provide explanations and allow calculations in information technology.



2-2-2 Adopted variables

TAM was the first model to mention psychological factors affecting computer acceptance, and the model assumes that both perceived usefulness perceived ease of use of the new technology are central in influencing the individual's attitude towards using that technology (Erik M. van Raaij, Jeroen J.L. Schepers, 2008). Y. -C. Huang (2006) also said that there are two beliefs that effect the attitude towards the use of the new technology PU and PEU.

Just like T. G. Kim and J. H. Lee and R. Law (2008) argued that both perceived ease of use and perceived usefulness jointly affect attitude towards use, whilst perceived ease of use has a direct impact on perceived usefulness. The study will adopt PU, PEU and attitude's relationship, and attempt to apply the theory on blog. But the study's model is like original model, and now we just want to treat about attitude, not intention.

According to these references, the study explores three variances: PU, PEU and attitude. Figures 2 represents the TAM model of this study.

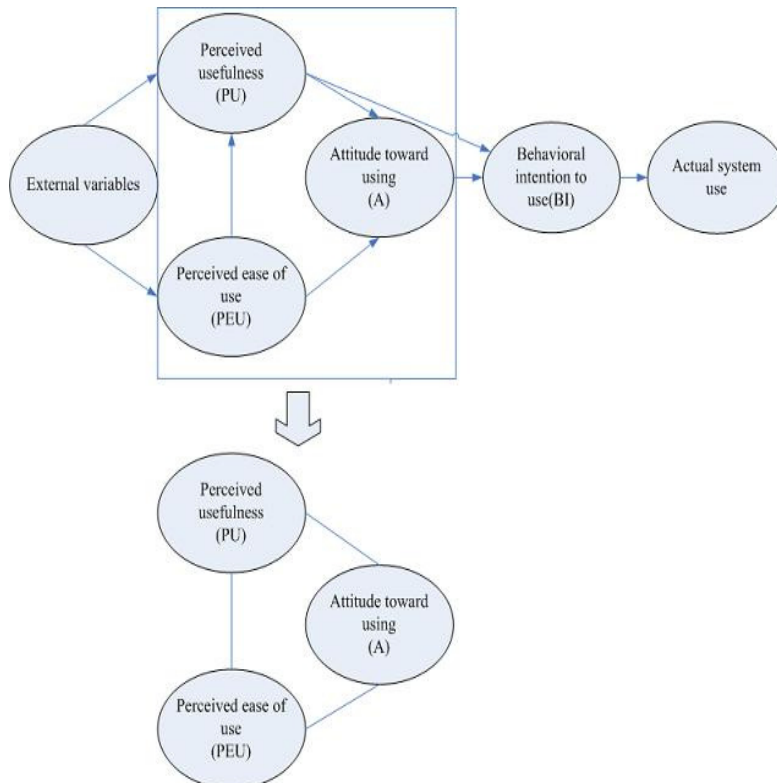


Figure 2. Adopted variances model (TAM)

To collect references and define the three variables for the study.

Perceived Usefulness (PU):



Il Im, Y. Kim, and H. -J. Han (2008) considered that PU would be more important when the technology was more job-related or utilitarian, and Carolina L. -N., Francisco J. M. -C., and NSand H. B.(2008) defined PU as the degree to which a person believes a system will help in performing a task more easily, quickly, and with quality, productivity and effectiveness.

Perceived ease of Use (PEU):

Il Im *et al.* (2008) defined PEU, as people's subjective appraisal of performance and effort; usually discrepancies exist between people's judgment and actual performance. Carolina L. -N. *et al.* (2008) also said that PEU is dependent on technology and user skills, explicit opinions expressed by others will affect it.

Attitude Toward Using :

I. Ajzen (1991) defined an attitude as the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior.

In fact, most studies on technology acceptance showed that PEU directly influenced PU and attitude towards use. (Y. -C. Huang, 2006; J. Schepers, and M. Wetzels, 2007; T. G. Kima *et al.*, 2008; Il Im *et al.*, 2008), and these literatures also said that PEU directly influenced attitude towards use. So the study hypothesized as following:

H₁: Perceived ease of use has a positive effect on perceived usefulness.

H₂: Perceived ease of use has a positive effect on user attitudes toward using blog.

H₃: Perceived usefulness has a positive effect on user attitudes toward using blog.

2-3 Innovation Diffusion Theory, (IDT)

The Innovation Diffusion Theory was introduced in 1962 by Rogers and was applied in important research into the Marketing Domain. However rapid changes in the technological environment, the appearance of new products, and high tech development and innovation forced many traditional industries to follow the trend in order to continue operating and growing. The use of the IDT concept facilitated advance in different industrial domains and can be usefully applied in other research.

The notion of innovation, is defined in difference ways. Schumpeter, J. A. (1984) and Pavitt, K. (1984) defined innovation as a process encompassing the development of new ideas into marketable products/processes. In line with the foregoing definition, Freeman, C. (1974) described innovation as a process comprising technical design, management, and commercial activities of new (or improved) products.

Diffusion is the stage at which a product or process becomes more widely available within a population. Rogers (1983) defined diffusion as the process by which an innovation is communicated through certain channels, over time among the members of a social system.



2-3-1 Characteristic of IDT

In the innovation studies literature, Rogers used well-established theories in sociology, psychology, and communications to develop an approach to study the diffusion of innovations (J. Wonglimpiyarat, and N. Yuber, 2005). Darley and Beniger (1981), however concluded on the basis of a literature review that the five innovation attributes formulated by Rogers (1995) are too general to predict the diffusion of energy conservation innovations.

Rogers (2002) defined the five characteristics paraphrased below:

1. **Relative Advantage:** the degree to which an innovation is perceived as better than the idea it supersedes.
2. **Compatibility:** the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.
3. **Complexity:** the degree to which an innovation is perceived as difficult to understand and use.
4. **Observability:** the degree to which the results of an innovation are visible to others
5. **Trialability:** the degree to which an innovation may be experimented with on a limited basis.

2-3-2 Adopted variables

A survey of the TAM and IDT literature revealed similarities between the two theories. TAM and IDT are amongst the most influential theories for explaining and predicting system use and the adoption of innovation. Although they originate from different disciplines, TAM and IDT have some obvious similarities. The relative advantage construct in IDT is often viewed as the equivalent of PU construct in TAM, and the complexity construct in IDT is very similar to the PEU concept in TAM (Moore and Benbasat, 1991, 1996; G. Premkumar, K. Ramamurthy, and Hsin-Nan Liu, 2008). Two points became clear after a study of Y. C. Liao (2006) compiled literature:

1. Affected attitudinal factors can be derived from innovative characteristics.
2. The factors that influenced consumers in their adoption of information technology behavior were: relative advantage, compatibility and complexity. Attitude can deconstructed from these factors.

This study will treat relative advantage and complexity. Then observability and trialability will be added to study the attitudes of Bloggers. But compatibility will not be included because it was not found to have an effect.

Relative advantage, complexity, observability and trialability are the important characteristics in IDT, and relative advantage and complexity are similarities it has with PU and



PEU. The framework is represented in Figure 3:

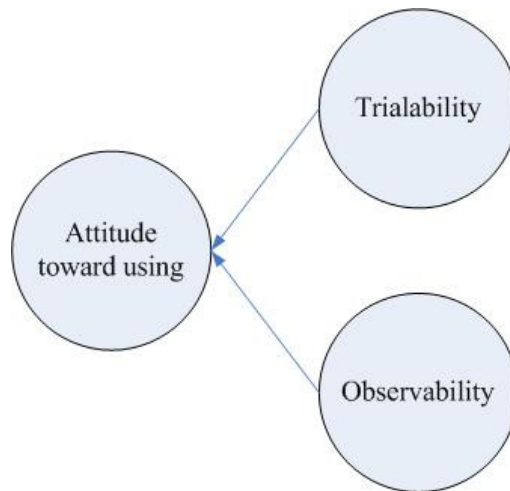


Figure 3. Adopted variances model (IDT)

To collect references and define the two variables for the study.

Trialability :

J. Williams (2008) said that trialability is the degree to which an innovation may be experimented with on a limited basis and he also said that an innovation that is trialable represents less uncertainty to the individual considering adoption. Thus the ability to try an innovation for a trial period increases rate of adoption.

Observability :

J. Williams (2008), and T.Vollink *et al.* (2002) defined observability as the degree to which an innovation is visible to potential adopters. And Jo Williams considered that the easier it is for potential adoptees to see the results of the innovation, the more likely they are to adopt and the faster the adoption rate.

This study attempts to apply to an innovative construct Blogs and Bloggers to examine User attitude. Hence the following hypothesis are offered:

H₄ : Trialability has a positive effect on user attitudes toward using blog.

H₅ : Obervability has a positive effect on user attitudes toward using blog.



2-4 Concept Model

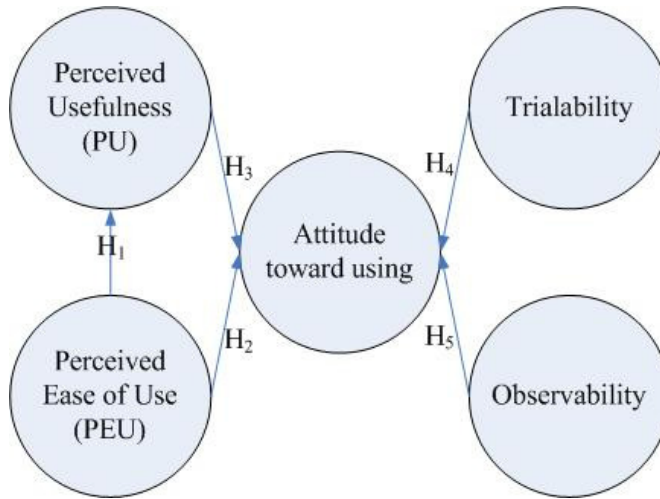


Figure 4. Concept Model

The study's hypothesis as following:

- H_1 : Perceived ease of use has a positive effect on perceived usefulness.
- H_2 : Perceived ease of use has a positive effect on user attitudes toward using blog.
- H_3 : Perceived usefulness has a positive effect on user attitudes toward using blog.
- H_4 : Trialability has a positive effect on user attitudes toward using blog.
- H_5 : Observability has a positive effect on user attitudes toward using blog.

Definition of the study five variables used in this study are as follows

Perceived Usefulness (PU): It means when users are using blog that they consider their life will give helpful, like the helpfulness of jobs or making friends.

Perceived Ease of Use (PEU): It means when users are using blog that they consider it good operation.

Trialability: It means when you see your relatives and friends are using blog, and that you can operate by yourself, one time you can find its advantages and shortcomings.

Observability: It means that blog provided functions and Web2.0 interface can be see

Attitude: It means when users have using blog that appear good or bad reaction.

3. Methodology

3-1 Reliability analysis

Reliability is also an indicator of convergent validity. Considerable debate centers around

which of several alternative reliability estimates is the best. Coefficient alpha remains a commonly applied estimate although it may understate reliability. Difference reliability coefficient do not produce dramatically difference results, but a slightly difference construct reliability (CR) value is often used in conjunction with SEM models. It is easily computed from the squared sum of factor loading (λ_i) for each construct and the sum of the error variance terms for a construct (δ_i) as (3-1):

$$CR = \frac{\left[\sum_{i=1}^n \lambda_i \right]^2}{\left[\sum_{i=1}^n \lambda_i \right]^2 + \left[\sum_{i=1}^n \delta_i \right]} \quad (1)$$

The rule of thumb for either reliability estimate is that 0.7 or higher suggests good reliability. Reliability between 0.6 and 0.7 may be acceptable provided that other indicators of a model's construct validity are good. High construct reliability indicates that internal consistency exists, meaning that the measures all consistently represent the same latent construct.

3-2 Confirmatory factor analysis, (CFA)

Confirmatory factor analysis (CFA) enables us to test how well the measured variables represent the constructs. The key advantage is that the researcher can analytically test a conceptually grounded theory explaining how difference measured items represent important psychological, sociological, or business measures. When CFA results are combined with construct validity tests, researchers can obtain a better understanding of the quality of their measures. (Joseph F. Hair, Jr., Willian C. Black, Barry J. Babin, Rolph E. Anderson, and Ronald L. Tatham, 2006)

In CFA, distinguishing between exogenous and endogenous constructs or independent and dependent variables is not necessary. In that sense, it is an interdependence technique. Therefore, the equation is explaining the x variables with a latent factor (ξ_i). We could express each measured variable with a y and the latent factors with an η . It is more common, however, to represent a measurement model using x to abbreviate the measured variables and ξ to represent the constructs. (Joseph F. Hair, *et al.*, 2006)

CFA can regarded as a SEM second model, and can be combined with SEM to make a full model. Therefore, it has been examined for theories and the factors' function has been confirmed (H. -W. Cheng , 2008).



In this section, the study will focus on TAM and IDT to examine the theoretical model and LISREL8.2 will be used to analyze the relationship between each aspect.

3-3 Importance-Performance Analysis, (IPA)

IPA, first introduced by Martilla and James (1977), and Hansen and Bush (1999) pointed out that IPA is a simple and effective technique that can assist practitioners in identifying improvement priorities for service attributes and direct quality-based marketing strategies. Practitioners apply IPA to analyze two dimensions of service attributes: performance level (satisfaction); and, importance to customers. Analyses of these dimension attributes are then integrated into a matrix that helps a firm identify primary drivers of customer satisfaction and, based on these findings, set improvement priorities (Matzler, K., Bailom, F., Hinterhuber, H. H., Renzl, B., and Pichler, J., 2004).

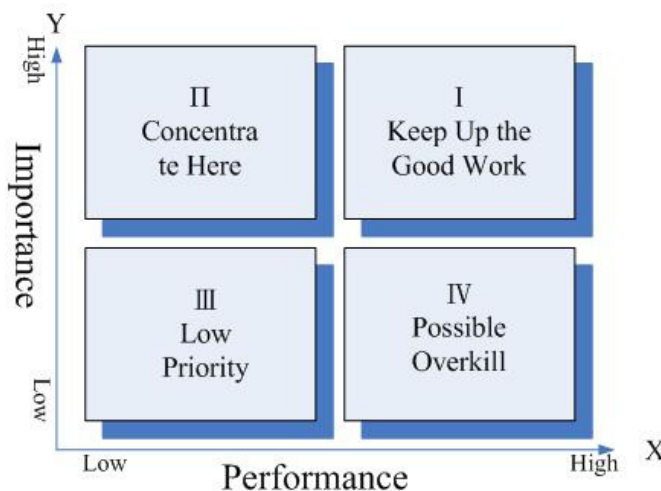


Figure 5. Importance-Performance Analysis grid.

Quadrant I

Both performance and importance are high, indicate opportunities for achieving or maintaining competitive advantage and are major strengths. The management scheme for this quadrant is “keep up the good work”.

Quadrant II

Performance is low and importance is high that require immediate attention for improvement and are major weaknesses. The management scheme for this quadrant is “concentrate here”.

Quadrant III

Performance and importance are low and that are minor weaknesses and do not require



additional effort. The management scheme for this quadrant is “low priority”.

Quadrant IV

Performance is high and importance is low, indicate that business resources committed to these attributes would be overkill and should be deployed elsewhere. These attributes are minor strengths. The management scheme for this quadrant is “possible overkill”.

Sources: Hansen, E. *et al.* (1999); Raymond K.S. *et al.* (2000); W. Deng (2007); Wei-Jaw Deng, W. -C. Chen and W. Pei (2008).

The study will apply the IPA technique to analyze users’ performance and importance of using blog.

3-4 Structure Equation Modeling, (SEM)

About Structure Equation Modeling (SEM), multivariate technique combining aspects of factor analysis and multiple regression that enables regression that enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs (variates) as well as between several latent constructs. (Joseph F. Hair, *et al.*, 2006)

SEM is a relatively new analytical tool, but its roots extend back to the first half of the twentieth century. SEM’s development originated with the desires of genetics and economics researchers to be able to establish causal relationships between variables. However, the mathematical complexity of SEM limited its application until computers and software became widely available. (Bagozzi, R. P., and L. W. Phillips, 1982; Byrne, B. M., 1998)

The proposed model was evaluated using: SEM, which is a powerful second-generation multivariate technique for analyzing causal models with an estimation of the two components of a causal model: measurement model is estimated using confirmatory factor analysis (CFA) to test whether the structural model is used to investigate the strength and direction of the relationship between the theoretical construct. (C. -L. Hsu *et al.*, 2008)

3-4-1 SEM’s equation

Figure 6 is Structure Equation Model. The model include two exogenous latent variables ξ_1 and ξ_2 , and two endogenous latent variables η_1 and η_2 . According to the model that ξ_1 is measured by X_1, X_2 , ξ_2 is measured by X_3, X_4 , η_1 is measured by Y_1, Y_2 , and η_2 is measured by Y_3, Y_4 . The relationship of latent variable and observed variable is LISREL’s “measurement



model”. And in this model, ξ_1, ξ_2 effected η_1 , ξ_2 effected η_1 , and this relation between latent variables is SEM’s “structural model”. Table 1 is each variable’s explanation.

According to theories that SEM can show by three equations as follow:

$$1. \quad \eta = B\eta + \Gamma\xi + \zeta \dots\dots \text{Exogenous latent variable and endogenous latent variable's structural model} \quad (1)$$

Equation 1 is latent variable model that represent the relation between latent variables, and link endogenous variable with exogenous variable by B, Γ , and SEM’s ζ .

B: The B represents the parameter coefficients that link endogenous constructs with other endogenous constructs.

Γ : The Γ is the corresponding matrix of parameter coefficients linking the exogenous constructs (η) with the endogenous constructs (η)

$$2. \quad y = \Lambda_y \eta + \varepsilon \dots\dots\dots \text{Endogenous variable's measurement model} \quad (2)$$

$$3. \quad x = \Lambda_x \xi + \delta \dots\dots\dots \text{Exogenous variable's measurement model} \quad (3)$$

Once values for η are known, we can also predict the y variables using on equation 2. Again, the expected value of ε is 0. Predicted values for each y (y_1 - y_n) can be computed similarly. Predicted values for each x also can be computed in the same manner using the equation 3.

Λ_x : The Λ_x is the corresponding matrix of factor loading linking endogenous observed variables with endogenous latent variable.

Λ_y : The Λ_y is the corresponding matrix of factor loading linking exogenous observed variables with exogenous latent variables.



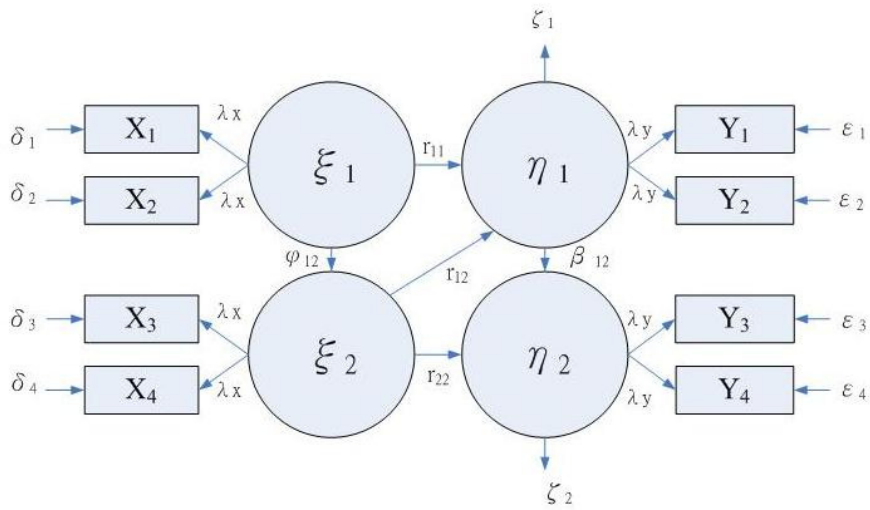


Figure 6. Structure Equation Model

Table 1. SEM's variables explanation

Symbol	Meaning
X	Independent variable
Y	Dependent variable
ξ (ksi)	A construct associated with measured X variables
η (eta)	A construct associated with measured Y variables
δ (delta)	The error term associated with an estimated, measured x variable
ϵ (epsilon)	The error term associated with an estimated, measured y variable
λ (lambda)	A path representing the factor loading between a latent construct and a measured x or y variables
(λ_x, λ_y)	
γ (gamma)	A path representing a causal relationship (regression coefficient) from a ξ to an η .
ψ (phi)	A path represented by an arced two headed arrow representing the covariation between one ξ and another
β (beta)	A path representing a causal relationship (regression coefficient) from one η construct to another η construct

Source: Joseph F. Hair *et al.*, 2006



4. Data collection

4-1 Questionnaire design

We used a questionnaire to determine all research variables using multiple-item scales. It was adapted from prior studies with minor wording changes to make them suitable for the Blog context. The scales for TAM and IDT's PU, PEU, trialability and observability were measured using items adapted from TAM and IDT's studies.

The survey had three major sections:

1. The first section dealt with the experience of using a Blog, and contained IPA to determine user satisfaction and importance.
2. The second section contained 22 items measuring the determinants of TAM and IDT. All items in this section were coded on 7-point Likert Scale ranging from "strongly agree" to "strongly disagree".
3. The third section contained demographic information about the respondents, including gender, age, student status, career, marital status, income and location.

4-1-2 IPA questionnaire design

The IPA questions originated from suggestions made by many different people including students that study publishing and cultural enterprise management, bloggers¹ and PCuSER (2006). The part is explored writers' feeling on blog's importance and performance when they use the functions.

4-2 Data collection

To examine the relationship between TAM and IDT, and explore the attitude of subjects that both wrote to and read Blogs.

To test the hypotheses, the study's questionnaire was presented in two ways:

1. As an online field survey: this was conducted using a questionnaire designed to be placed on a web site by CVS (<http://210.17.21.66/CVSVote3.htm>), see Figure.10 The questionnaire was posted and available between November 17 and December 31,

¹(2008.07.14) · <http://www.wretch.cc/blog/garphic> °
(2008.06.21) · <http://www.wretch.cc/blog/hugo1005> °
(2008.07.10) · <http://www.wretch.cc/blog/fjumonkey> °
(2008.06.20) · <http://simplement.pixnet.net/blog> °
(2008.07.12) · <http://www.wretch.cc/blog/meli> °



2008

2. Questionnaires were distributed to major university in the south of Taiwan. The research period was from October 19 to 24, 2008

The samples: 729 on-line questionnaires and 221 printed ones were returned. Out of a total of 950 total returned questionnaires, 900 were effectively usable.

5. Analysis and Result

5-1 Descriptive statistics analysis

5-1-1 Demographic Characteristics

The overall amount of data in this analysis dataset is 971 including 71 non-returns and 900 returns. Analysis of the respondents: 70.1% are female; 46.3% are in the 21-25 age groups; 69.8% are in college; most are students 51.3%; 85.7% are single; 65.8% of the respondents had not incomes in excess of 20,000 NTD and 45.6% respondents live in the south.

Experience with Blogs: 49.0% have been using the Internet for more than 7 years; 62.6% are in the 3 hours and over Internet access time groups; 79.3% have their own Blogs and 63.3% are using Wretch. 54.1% of the respondents were in the 30 minutes and over reading and writing Blog time groups and 77.8% had experience in writing Blogs.

5-2 Importance-Performance Analysis, (IPA)

5-2-1 All writers' IPA analysis

All the respondents to the IPA analysis as following:

Quadrant I : Both performance and importance are high on this quadrant. So Blog can refer to A1², A2, A8 items and keep up the good work.

Quadrant II : In this quadrant, performance is low and importance is high, so the items here should be the first to be improved, but the study has no item for this.

Quadrant III : Both performance and importance are low in this quadrant. So A3, A5, A6, A7 should be the second to be improved.

Quadrant IV : Quadrant III and quadrant IV's performance is relative low, but quadrant IV's

² A1. Blog interface is smooth; A2. Blog provides multiplicity functions; A3. Blog provides multiplicity type of interface; A4. Web space provided by the Blog enough for normal use; A5. Blog grammar is widely limited; A6. To subscribe RSS; A7. Teaching is clearing.; A8. Upload functions are provided.



importance is relatively high. A4 has importance enough, so that it should be improved first before quadrant II and III to be more effective and beneficial.

5-2-2 Importance of blogs' future functions analysis

Further study: an examination of the importance of future Blog functions reveals that the most important of these, to all writers, is the sharing of resources between blogs, the results are shown in Table2.

Table 2. Future functions' average

<i>Further functions</i>	<i>Total writers</i>
1. Blog provides immediate messenger itself.	3.74
2. Blog provides web cam that can increase writers and readers' interaction.	3.33
3. Blog provides writers painting with hand to write diary and readers leave messenger.	3.87
4. To provide function that can download whole albums.	3.68
5. To share resources between blogs. (ex: to share between Wretch and Yahoo's resources)	4.05
6. Blog provide hyperlink to anther website to shop, and cooperate with dealers.	3.76

5-3 Structural Equation Modeling, (SEM)

To start with a measurement model was developed by conducting confirmatory factor analysis (CFA) to measure convergent and discriminant validity. The structure equation model was then estimated for hypothesis testing. Both the measurement model and the structural model were assessed by the maximum likelihood method using LISREL 8.20.

5-3-1 Analysis of the measurement model

Factor loading is between 0.78~1.03 this is above 0.5, so the variance between these items can be explained. And the study's average variance extracted (AVE) all are above 0.5 which is just above the standard, so the questionnaire has good convergent validity. In other cases the construct reliability values all are above 0.7 and the construct has enough reliability. (Joseph F. Hair *et al.*, 2006)



The original measurement results showed that some values could not be fitted to the index standard, so we amended EFA and CFA by deleting PU1, PU2, PEU1, Tri1 and Obser1. The process of amending the model was not expanded in my study. Table 3 shows the discriminant validity of users after the amendment.

From Table 3 it can be seen that the variance extracted by constructs was greater than any squared correlation among constructs; this implies that constructs were empirically distinct. To summarize, the measurement model test, including convergent and discriminant validity measurements, was satisfactory.

Table 3. Discriminant validity

	Att1	Att2	Att3	Att4	Att5	PEU3	PEU2	PEU4	Tri3	Tri2	Tri4
Att1	1.17										
Att2	0.90	1.39									
Att3	0.83	0.97	1.57								
Att4	0.78	0.88	0.96	1.33							
Att5	0.67	0.69	0.77	0.76	1.03						
PEU3	0.60	0.59	0.62	0.58	0.59	1.24					
PEU2	0.63	0.61	0.61	0.60	0.59	0.86	1.13				
PEU4	0.62	0.61	0.67	0.64	0.62	0.83	0.70	1.15			
Tri3	0.66	0.67	0.69	0.71	0.66	0.65	0.64	0.64	1.21		
Tri2	0.58	0.62	0.62	0.67	0.53	0.53	0.50	0.54	0.92	1.41	
Tri4	0.65	0.66	0.70	0.69	0.65	0.57	0.64	0.63	0.97	0.78	1.12
Obe v3	0.72	0.72	0.79	0.76	0.65	0.60	0.64	0.67	0.79	0.66	0.75
Obe v4	0.73	0.72	0.77	0.73	0.61	0.55	0.61	0.60	0.67	0.62	0.69
Obe v2	0.88	1.35									
PU2	0.64	0.65	0.74	0.70	0.66	0.52	0.55	0.63	0.68	0.61	0.67
PU1	0.84	0.75	1.12								
	0.51	0.69	0.70	0.53	0.40	0.53	0.49	0.43	0.48	0.42	0.44
	0.44	0.47	0.30	1.64							
	0.57	0.58	0.58	0.53	0.53	0.50	0.50	0.51	0.56	0.52	0.53
	0.57	0.53	0.55	0.67	1.01						



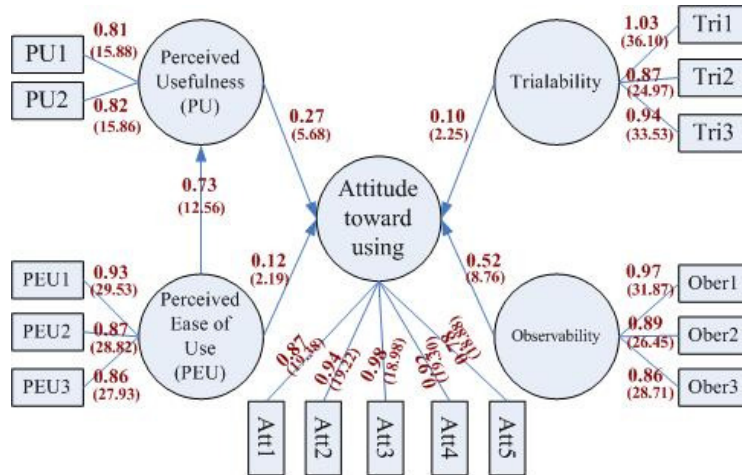


Figure 7. Result of Structural Equation Model

Figure 7. portrays the hypotheses test results and the completely standardized parameters in the proposed structural model. All our hypothesized associations were significant at $p=0.00$. In general, the study's fit index is, Chi-square/df=6, GFI=0.92, AGFI=0.89, NFI=0.94, NNFI=0.94, IFI=0.95, CFI=0.95, RMSEA=0.075, RMR=0.053. According to these data, it can be shown that each construct relation and the empirical data are fit.

PU has direct effects on attitude toward using blog ($\beta=0.27$, $p<0.05^*$), PEU has direct effects on attitude toward using blog ($\beta=0.12$, $p<0.1$), besides PEU has direct effects on attitude that PU has indirect effects on attitude toward using blog by two direct effect's product ($0.73*0.27=0.20$), trialability has direct effects on attitude toward using blog ($\beta=0.10$, $p<0.05^*$), and observability has direct effects on attitude toward using blog ($\beta=0.52$, $p<0.1$). However, PU and trialability were significant determinates of attitude toward using blog.

6. Conclusion

6-1 Research Discovery

6-1-1 IPA results

The IPA portion is designed for writers, exploring their significances and performances on blog provided functions.

Importance-Performance analysis on blog functions:

1. "Blog interface is smooth", "Blog provides multiplicity functions" and "Upload functions are provided". These three functions are important and their performances are targeted to



writers. These three functions have their advantages on blogs, so we should enhance the existing advantages to maintain the blogs' quality level.

2. "Web space provided by the Blog enough for normal use" is more important than performance. In conclusion, Blog' space is more important for users, but they are not the performances designated to them. Because the point is that Wretch is performed by 63.3% users, and if users want to increase space on Wretch they have to pay for it. So they can't upload many videos, photographs etc., and therefore the performance level drops.
3. As for "Blog provides multiple types of interface", "Blog grammar is widely limited", "To subscribe RSS", and "Teaching is clearing", these four functions are not important and its performance only matters for writers. In conclusion, the four functions are not necessarily entailed without any usage; however they have to re-plan and increase writers' performance and its importance felt by writers.

Levels of importance for blog's future functions:

1. One of "To share resources between blogs. (ex: to share between Wretch and Yahoo's resources)" is more important for writers regarding blog's future functions. In conclusion, share resources of messages, functions, and photograph etc. between blogs are important for writers.

6-1-2 Concept analysis

According to the analysis, PEU would induce a positive attitude toward using blogs, and PEU has direct effects on attitude that PU has indirect effects on attitude toward blog usages by effects from two direct products. The finding is the same between researches conducted by Raaij et al. (2008), and Y. -C. Huang (2006) etc. Another finding, the observability has a greater effect on attitude than other variables. In conclusion, there is a great effect existed between users by observing blogs and then choosing whether to use or not.

This section will discuss the effects for PU, PEU, Observability, and Trialability on attitude toward using the blog. The discussion is summarized as follow:

1. *Perceived ease of use has a positive effect on perceived usefulness.*

In conclusion, when blogs are more useful that their attitudes tend to be positive on using them and increase the usage rate.

2. *Perceived ease of use has a positive effects on users' attitudes toward using blog.*

In conclusion, the process for using blog should be more flexible and understandable when users are using them. For users, their attitudes tend to be positive on using blogs and



increase the rate for trialability for new technologies.

3. *Perceived usefulness has a positive effects on users' attitudes toward using blog.*

In conclusion, when the number of users would increase when blog response time to serve these users can be increased also, as well as the times of usage

4. *Trialability has a positive effects on user's attitudes toward using blog.*

In conclusion, these advantages tend to let users have positive attitudes on using blogs and increase the rate of usage.

5. *Observability has a positive effects on user's attitude toward using blog.*

In conclusion, when they know the advantages through the process and understand the online culture which would be receptive, then they would use them. And uses' attitudes tend to be positive on using blogs and increase the rate of usage.

6-2 Research Suggestion

For academia:

Technology Acceptance Model (TAM) not includes external variables, behavioral intention and actual system usage. Further study can evaluate whether to add the whole TAM concept and IDT's five characteristics to further explore the users' attitude; about Innovation Diffusion Theory (IDT), we could not find any relationship existed between compatibility and blogs. Further study may be conducted to explore the concerns of compatibility and the relationship on digital publishing.

For Internet service providers:

Blogs can generate in-depth effects for users. In recent years, referencing request on blogs is on the rise. During this period, online culture also has pushed envelop for interpersonal interaction. We should confront and address these problems proactively, and hope that with service improvements and technological innovations, the user's incessant asking the service providers to achieve the high levels of importance and performance for each function implemented; this should not be surprising after all.



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