ANALYSIS OF INFORMATION TECHNOLOGY USER BEHAVIOR AT HIGHER EDUCATION INSTITUTION HOLDING BHMN STATUS
(A Study of Information Technology at FPEB - Universitas Pendidikan Indonesia)

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Abstract

This research assessment is conducted to predict the acceptance of internet technology at UPI's academic society, using the Technology Acceptance Model or TAM, adding the social influence variable and self-efficacy, that become the antecedent of behavior other than TAM construct, such as perceived usefulness and perceived ease of use.

The research is descriptive and quantitative with the research method used descriptive survey and explanatory survey. Research subject consist of lecturer, students and academic staff at FBEP UPI, the sample size is 290 people taken by simple random sampling. The data analysis used is descriptive and quantitative analysis. Descriptive analysis used the frequency distribution and percentage through Likert Scale. The quantitative analysis used to test the hypothesis by means of Structural Equation Modeling

The result shows that respondent assessed internet usage is not difficult and can give benefit to reach their work performance. Respondents also think highly of their self efficacy in using the internet and gave medium response on social influence on their decision to use the internet. Respondents have high acceptance rate for internet usage, showing high interest in using it and high in actual implementation of usage.

Attitude of internet usage is influenced mainly on perception of internet benefit and social influence. Interest to use the internet is influenced by self efficacy and social influence. Actual usage of internet is influenced mainly by the social influence. The positive attitude on internet usage has influence on actual internet usage through the interest variable.

Keyword : Technology Acceptance Model (TAM)

Introduction

Transformation of UPI becoming PT BHMN is stated at PP No. 6 tahun 2004, basically is a strategic policy. The BHMN Status made UPI more independent to lead itself, motivate, organize, support, evaluate and independent to decide in facing its'

challenges a head. The problem now is how UPI position itself as a PT BHMN effectively, efficiently and accountable. To answer the challenges a shift in paradigm and management strategy from conventional to new paradigm and management strategy, meaning UPI management now (academic, Human Resources, Facility, Finance, Technology, public relations) have to be seen as a corporate). In this tradition, measurement such as effectiveness, efficiency, productivity, quality, growth, satisfaction, flexibility, openness and performance appraisal also accountability can grow and develop in UPI institutional organization.

By giving attention to strategic areas as a focus of change, several steps must be taken: (1) empowering potential and supporting resources, which is an effort to identify, classify and empower internal HRD and all supporting aspect so it strengthen UPI position and role as PT BHMN that is independent and accountable, (2) Repositioning, conduct evaluation and review all strength and weakness, opportunity and threat so it can be improved and strengthened. All components must be given an opportunity in empowering all potential and capacity building be it in an academic position, management and administrative or financial independently and responsibly.

To obtain effective and efficient performance, UPI must develop an information system that can enable all academic society has the chance to use the technology system in order to reach their objectives. This is in accordance to the information technology role in the organization starting from strategic role, tactical or operational. The information technology system built by UPI is a part of the organizational component along side of HRD, each interacting, where in the interaction process, the process effects that may occur, the first the system became optimal and performance effective and efficient or system became not optimal because the human user of the system refuse to utilize it. Many research shows that the biggest cause for failure in the information system of an organization is not due to technical quality or information it produces, but system application failure is caused mostly by behavioral aspect. (Jodiyanto, 2007:2).

Boodnar and Hopwood (1995) stated that IT development needs careful planning and implementation to avoid denial toward the system developed and it is related to the individual behavior change in conducting their work. The denial toward information system developed can impact on the low usage of information system continually and in the end lower the organizational return on investment of information technology. (Venkatesh and Davis, 2000). In order for the information technology system can be well accepted, the denial behavior must be changed or the system is prepared first. Changing the behavior cannot be directed at the behavior, but must take into account the cause of the behavior. Identifying determinant factor/ information technology adoption became very important in developing information system, so high investment on IT facility will be accepted and creates organizational value.

The research is conducted to measure the prediction of information technology acceptance and adoption of information technology mainly internet technology, to all UPI civic academic with the Technology Acceptance Model or TAM approach adding social influence variable and self efficacy, that became the antecedent behavior other than TAM construct which are perceived usefulness and perceived ease of use.

Research Objective and Benefit

The objective of this research is to obtain description on internet technology acceptance and testing the internet acceptance model with Technology Acceptance Model (TAM) approach and measure the relations amongst variables in TAM to predict internet technology acceptance in civic academic FPEB UPI. If the research objectives can be achieved then the benefit of this research is information system developed can be accepted by the user, so it will increase service value given to the civic academic UPI and identify education and communication strategy that will encourage information technology acceptance in UPI civic academic.

Technology Acceptance Model

One of the theories in information system technology usage that have influence and used widely to explain the individual acceptance on information is the Technology Acceptance Model (TAM) introduced for the first time by Fred D. Davis in 1986, as an adoption from Technology of Reason Action (TRA). The main purpose of TAM is to give framework tracing the influence of external factor on belief, attitude and user objective. The TAM model assumptions are some one adopts a technology that is determined by the cognitive process and the purpose of satisfying its user or maximizing technology usage. The key to information technology acceptance by user is evaluation about the technology usage.
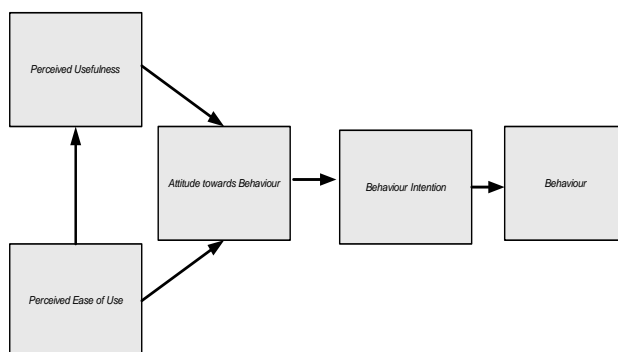
Picture 1.
Technology Acceptance Model

Technology Acceptance Model Construct

There are five main constructs that develop TAM, the five main construct are:

1. Perceived Usefulness

Jogiyanto (2007:114) defined Perceived usefulness as how far an individual believe that by using technology it can increase the work performance. The benefit of IT usage can be known by IT user belief in using IT and believe that using IT will have positive contribution for the user. Measurement of the construct usefulness according to Davis (1986) consists of (1) Work More quickly, (2) useful,(3) Increase productivity, (4) enhance effectiveness, (5) improve job performance.

The previous research shows that perceived usefulness construct have positive influence and significant on information system usage. Other than that the perceived usefulness construct is the most significant construct and important influencing attitude, behavioral intention and behavior in information Technology usage compared to other construct.

2. Perceived Ease of Use

Ease of use is defined as how far the individual believe that using technology will be effort free. (Jogiyanto, 2007:114). Based on the definition it can be stated that ease of use will decrease effort (time and strength) for someone to study the computer. IT user believe that IT is more flexible, easy to understand and compatible as characteristic of ease of use.

Davis.F.D (1986) gave several indicators in the ease of use construct, which are: (1) Easy to Learn, (2) Controllable (3) Clear & Understanable, (4) Flexible, (5) Easy to Become Skillful) (6) Easy to Use.

The previous research shows that the ease of use construct influence attitude, behavioral intention and behavior.

3. Attitude Toward Behavior

Attitude toward behavior is defined by Davis et. Al (1989) as positive or negative feeling when someone must conduct a certain designated behavior. Several research shows attitude have positive influence on behavioral intention. But several researches show that attitude does not have significant influence on interest behavior, so several researches do not include the construct in the model.

4. Behavioral Intention

The behavioral intention is an individual interest to conduct a certain behavior. An Individual will conduct a certain behavior if he/she has a want or interest in doing it. (Jogiyanto 2007:116). The previous research shows that behavior interest is the best prediction for technology usage by system user.

5. Behavior

Behavior is action conducted by an individual. In the context of technology information system, behavior is actual use of technology (Jogiyanto 2007:117). In the research because the actual use cannot be observed by researcher a list of questions is administered, the usage term is replaced with perceived usage. David (1989) use the term real usage, as Igbaria et al (1995) stated perceived usage can be measured by the amount of time used to interact with a certain technology and usage frequency.

Model TAM Existence

The TAM model has undergone development since its first introduction. The model is divided into for stages which are: (1) model introductory, (2) validation model, (3) existence model and (4) Elaboration model.

In the TAM mode existence stage, several research developments are conducted adding on several external variables that can describe the cause of perceived usefulness and perceived ease of use.

External factor used can be categorized as individual variable, organization, culture and work characteristic. Amongst the external variables are: self efficacy and Social Influence.
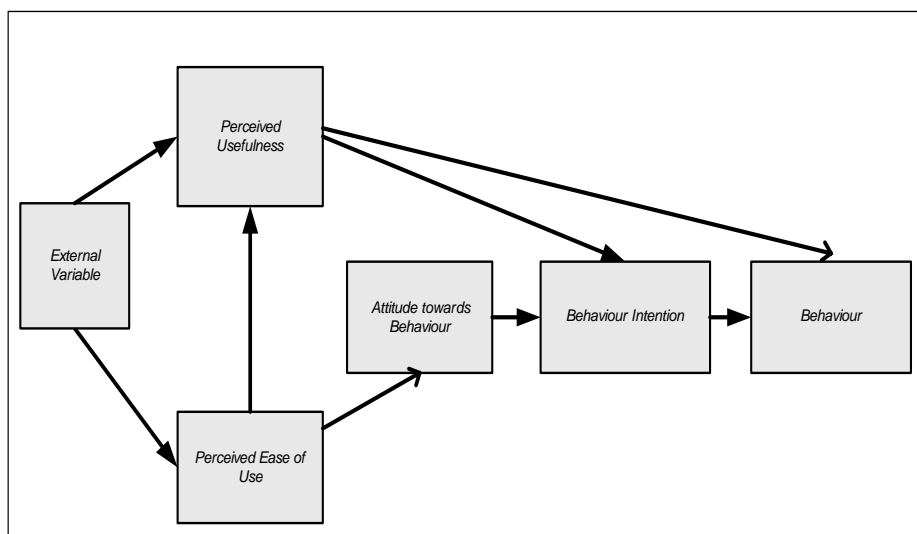
Picture 2.
Model TAM Developed

1. Self Efficacy

Bandura (1977) defined as human considerations about abilities to organize and conduct activities needed to obtain planned performance. This has relations not with one's expertise but consideration about what a person can do with their skills. Self efficacy is very important to study the dimension of relevant consideration. There are three dimension of self efficacy, they are:

a. Magnitude

Magnitude of self faith is related to the task difficulty level that one can do. A person with high self-efficacy can see themselves as having the ability to finish complicated task, thus a person with low magnitude will see themselves only be able to finish simple task.

b. Strength

Strength in self-efficacy is related to degree of confidence about the consideration. Strength in confidence reflect denial about uncertain information, individual with weak strength in self-efficacy will easily e frustrated because of obstacles that deter their performance and will respond with the low ability perception. On the contrary the individual with strong strength in self-efficacy will not be detracted by problems arise and can defend their confidence about their work and will be persistent and can solve problems.

c. Generalizatibility

Generalbility came from self –efficacy showing how far the individual can perceive themselves in a certain condition. Several individual believe that they can do some behavior, but only in certain situation. This is called low generalizability. Thus individual with high generalizability have the ability to conduct behavior under certain condition or situation.

In relations to individual self efficacy is in terms called computer self –efficacy. Hong et al (2002) in Jogiyanto (2007, pg 139) defined computer self-efficacy conceptualized based on self efficacy theory as one of the individual evaluation on ability to use the computer. Bandura (1982) differentiate the self-efficacy judgment with outcome judgment. Considerations of outcome judgment are how far a behavior if conducted relates to output. Bandura belief that behavior can be predicted well with trust and confidence.

The dimension of self efficacy is used also in computer self-efficacy, which consisted of:

1) Magnitude computer self-efficacy -reflex one's expected capability level in conducting computer work.
2) Strength in computer self-efficacy –related with one's level of consideration or belief one has about ability to conduct different kinds of computation.
3) Generalize computer self efficacy- reflex a degree on judgment bound on certain computational domain. Individual with high generalizability is expected to do well with the different software for computer operating system. The individual with low generalizability will perceived themselves as limited in using a certain kind of software of operating system.

2. Social Influence

The TAM model lack one important item, it does not describe the influence of social adoption and new information system usage. Several researches are conducted to develop/extend TAM from social process theory by Kelman's (1958) called psychological attachment, with social influence on Behavior Intention and Attitude toward Using.

Social influence is defined as how far an individual perceived their interest by others that will influence them to use the new system. (Jogiyanto :2007, page 321). Thompso et al (1991) used the term social norms in defining the construct and acknowledge the construct to be the same with subjective norm in TRA.

The social influence has impact on individual behavior through three mechanisms. Herbert C Kelman stated that social influence have three impacts on individual behavior through three mechanisms:

a. Compliance, occurs when an individual receive influence of a group or person. The individual will receive reward or avoid punishment from the influence group. A person accepts behavior not because of trust, but because of the behavior will have social effect that is satisfactory from the environment.
b. Identification, occurs when an individual can take behavior from a person or group because the behavior is connected to satisfying self-defining relationship with a person or group.

c. Internalization, occurs when an individual receive influence on behavior that is suggested by the value system he/she believe. We accept ideas, thought or advice from others, because the idea, thought or advice can be useful to solve problems, important to show guidance or way also is desired by our value system.

Based on Kelman, David et al (1989) framework stating that social influence can affect Behavioral Intention indirectly through attitude with internalization and identification or influence it directly through obedience.

Research Hypothesis

Hypothesis 1
Internet Ease of Use, Benefit of Using the Internet, Ability to use internet, Subjective Norm in Using the Internet Silmutaneously or Partially influence on Internet User Attitude.

Hypothesis 2
Internet Ease of Use, Benefit of Internet Usage, Ability to use internet, Subjective Norm in Using the Internet Silmutaneously or Partially influence Internet User Behavior.

Hypothesis 3
Internet Ease of Use, Benefit of Internet Usage, Ability to use internet, Social Influence in Using the Internet Silmutaneously or Partially influence Internet Actual Usage.

Hypothesis 4
The internet attitude influence on Internet User Behavior.

Hypothesis 5
The attitude of Internet User and Behaviour of Internet User influence on Actual Internet Usage.

Research Design and Method

Research Methodology
The research used the descriptive and quantitative. The research method used is the descriptive survey and explanatory survey. Information is collected through a survey of a part of the population (respondent sample) from the field empirically with a purpose to find out the opinion of the some population on the research object.

Subject and Object
The object studied are internet ease of usage, benefit of internet usage, ability to use the internet, social experience on internet usage as an independent variable and internet usage attitude, behavior interest in internet usage also actual internet usage as

dependent variable. The research subject is: lecturer, students and civic academic staff of FBEP UPI, sample size of 290 people taken with simple random sampling.

Data Analysis

Data Analysis conducted consisted of descriptive and quantitative analysis. The descriptive analysis on the variable have the qualitative nature conducted through analysis of closed ended questionnaire that can be use to collect data about description of ease of internet usage, benefit of internet usage, internet ability of user, subjective norm on internet usage, attitude of internet usage, behavior in using the internet, and actual usage of internet. The analysis used frequency distribution method and percentage in accordance to Likert scale. Quantitative analysis conducted used statistic to assess the hypothesis with SEM or Structural Equation Modeling.

Research Result and Analysis

Respondents Assessment on Internet Usage

Perception of FPEB civic academic on internet ease of use can be stated in the ease of learning, interacting, getting what we want, operating and interacting with IT is in the medium category, where ease of learning the internet scored the highest (20,27%), whereas degree of clarity and understanding interaction through IT scored the lowest (19.07%.).

Perception of FPEB civic academia on benefit of internet can be seen through the internet benefit to finish task, gave ideas and inspiration for work, help increase performance and productivity is in the medium category, the internet benefit most in finishing task much more quicker and better scored the highest (21,24%), while internet benefit to increase productivity in learning scored the lowest of (18,27%).

Perception of FPEB civic academia on self-efficacy in using the internet, form dimension of ability to use browser application, access website, search engine, download filer, opening email account, communicate by email, communicate using social network is categorized high, ability to communicate by email scored the highest (14,59%), while ability to use browser application is the lowest score(13,62%).

Perception of FPEB civic academia on effect of social influence in internet usage can be seen from the added value, lifestyle internet usage, encouragement from family/ friends, pride in using the internet, internet usage is due to acceptance of environment, interest to recommend, internet usage because of obligation and task is in medium category, where internet can have added value on task score high (13,55%). While usage due to obligation by lecturer and university scored the lowest. (8,58%).

Perception of FPEB civic academia on attitude of internet usage can be seen from wisdom of attitude, positive attitude in using the internet, including high category, where attitude in using the internet scored highest (27,10%), and positive attitude scored the lowest (23,42%).

Perception of FPEB civic academia behavior interest in using the internet can be seen as internet a communication media, dependence on internet to finish task, internet as an up-to-date information source and using internet in learning process are in the high category. Respondents attitude in using the internet as a source of information is very high (27,43%), while dependence on internet for task is the lowest (20,90%).

Perception of FPEB civic academia in actual usage can be seen from number of week, hours and intensity in the high category where as internet usage in a week record the highest score (36,49%),while the actual usage in number of hours is the lowest (20,46%).

Testing The Hipothesis

The quantitative measurement was conducted in two stages. The first stage is conducting test simultaneously as validation the whole research model. Second the hypothesis is tested partially. The model is tested overall using Chi Square of 1244,53 with degree of freedom 609 and RMSEA about 0,060 < 0,08, indicating that the model theoretically and conceptually can be accepted at the significant rate of 5%. Descriptively the assessment shows a GFI of 0,98, AGFI of 0,96, and NNFI about 0,99 near one so the model can be accepted.

By comparing the T-test value in the path diagram with t table value of (α=0.05) near 1,96 shows that all indicator develop the latent variable significantly. Not all the exogenous variable gave contribution positively toward the endogen latent variable.

Hypothesis 1 : Perception of ease of usage, self-efficacy and social influence effected internet user behavior

Lisrel test conclude that the t value is 2,56 on relationship of benefit perception on attitude and t value of 5,44 on relationship of social influence on attitude is located in critical boundary of 1,96, so the influence given by benefit perception and social influence on internet attitude usage can be significantly proven and t value of 1,09 self-efficacy on attitude is below critical level of 1,96, so the influence of ease and self-efficacy perception on attitude of internet user is not significant. The total influence of all exogenous variables toward endogen variable is 46.44%, the rest is 53.55% influenced by other variables. The contribution of each exogenous variable is: social influence (39,69%), perception of internet benefit variable (6,25%),internet ability(0,38%) and ease of usage internet variable is 0,12%.).

Hypothesis 2: Perception of ease, perception of benefit, self-efficacy, social influence effect on behavior interest using the internet.

Lisrel test conclude that the t value is 2,15 on relationship of self efficacy perception on interest and t value of 4,27 on relationship of social influence on interest is located in critical boundary of 1,96, so the influence given by benefit perception and social influence on internet behavior interest can be significantly proven. T value of 0,91 in relationship perception of ease of usage on interest and t value of 0,21 perception of benefit toward interest is below the critical boundary 1,96, so the perception of ease and benefit toward behavior interest is not proven to be significant.

The total influence of all exogenous variables toward endogen variable is 58.92% %, the rest is 41.02% influenced by other variables. The contribution of each exogenous variable is: social influence (56.25%), self-efficacy in using internet (1.69%), ease of internet usage (0,94%) and perception of internet benefit variable is 0,04%.

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Hypothesis 3: The influence of Internet Ease of Usage, Benefit of Internet Usage, Ability to use the internet, Social Influence on Internet User on Actual Internet Usage.

Lisrel test conclude that the t value is 3,39 on relationship of social influence on interest is located in critical boundary of 1,96, so the influence given by social influence on internet actual usage can be significantly proven. T value of 1,38 in relationship perception of ease of usage, with t value of 1,12 on the relationship of benefit perception on actual usage and t value of 0.83 on the relationship of self-efficacy on actual usage is below critical boundary of 1,96, so the perception of ease, benefit and self efficacy toward actual usage is not proven to be significant.

The total influence of all exogenous variables toward endogen variable is 31.15%, the rest is 68.85% influenced by other variables. The contribution of each exogenous variable is: social influence (24.01%), internet ease of usage (4.41%), perception of internet benefit (2,25%) and perception of internet ability variable is 0,48%.

Hypothesis 4: The Internet Usage Attitude influence on Internet usage behavior interest.
Lisrel test conclude that the t value is 8,26 on relationship of attitude toward internet usage behavior interest is located above critical boundary of 1,96, so the influence given by Internet Usage Attitude on Internet usage behavior interest can be significantly proven. The total influence of all exogenous variables toward endogen variable is 88.36%, the rest is 11.64% influenced by other variables.

Hypothesis 5: The Internet Usage Attitude and Internet Usage Behavior influence Internet actual usage
Lisrel test state that the t value is 8,41 on relationship of attitude toward interest of internet usage behavior and t value of 6,66 in the relationship of internet usage behavior interest on actual internet usage is above 1,96 critical boundary. This shows that internet usage have influence on internet usage behavior and significantly impact the actual internet usage. The total influence of internet usage attitude on internet behavior usage also the effect on internet actual usage is about 83.6% the rest is 16.4% influenced by other variables.

Summary and Reccomendation
Summary
1. Respondents find that the internet usage is not difficult and gave benefit to help reach their work performance.
2. Respondents rate highly of them with ability to use internet facility and found that social influence have effect on internet usage.
3. Respondents have acceptance attitude on internet that is high, high interest to use the internet and shows high actual usage.
4. The usage attitude is influenced by internet usage benefit and social influence.
5. Interest to use the internet is effected by social influence and self-efficacy
6. Actual internet usage is influenced mainly by social influence in using the internet.
7. Positive attitude in internet usage have influence of actual usage through the interest variable.

Recommendation

1. Support from the university in the form of training and technical support consistent and continually so the system usage become more optimal.
2. Support from university in the form of ease of access using the internet such as improving and adding network, wider distribution of network and adding more Personal Computer in each work unit.
3. Organization commitment in internet facility usage in academic and administrative activity through work procedure adjustment relevant with internet technology.
4. Socialization to cultivate the culture of E-learning potential usage amongst lecturer and students at FPEB UPI.

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