A Study of Consumer Behavior in Adoption of Technology-Based Product

Ira Fachira
Reza Ashari Nasution
Business Strategy & Marketing Research Group
School of Business & Management
Bandung Institute of Technology, Indonesia

ABSTRACT

This paper aims at describing factors that influence consumer intention to use new technology and how these factors interact with each other. The Academic Information System of the School of Business and Management ITB was selected as the unit of analysis and the Unified Theory of Acceptance and Use of Technology model was used to identify the degree of acceptance of different groups of users to the systems and the factors that influence their intention to use it. This study involves different user groups (students and lecturers). To provide further understanding of consumer behavior in technology adoption, Structural Equation Modeling will be used to test simultaneous effect of the factors in the model.

Keywords: technology acceptance, Academic Information Systems, consumer behavior

1. Introduction

The School of Business and Management at Institut Teknologi Bandung (SBM ITB) was founded at the end of 2003 and aims to become one of leading business schools in Asia within 10 years of its establishment. Master of Business Administration Program, previously in the Department of Industrial Engineering, was the first program integrated into SBM followed by the Bachelor of Business, commenced in August 2004. Various learning methods were used to create an exceptional learning environment to achieve this vision. Academic Information System (AIS) was developed as a part of academic support systems in which it connects lecturers and students to enhance learning activities. It was also designed to help administrative staff perform their supporting tasks relating to students and lecturers.

Academic Information System was developed in the early 2004 and trial phase began at the end of the same year. It was designed as a portal to all academic activities such as uploading and downloading course materials, submitting assignments and checking abstains and grades. It also provides students with link to administrative affairs, for example checking course schedule and announcement, assigning to elective courses, asking for letters from the school etc. Samples from its target users were picked to gain feedbacks and at the beginning of the first semester of 2005 it was officially launched with necessary modifications as noted from the feedbacks.

To ensure usage, a number of trainings were conducted separately for each user. Administrative staffs and lecturers, who were essentially responsible for AIS contents, were trained before the semester begun so that AIS would be ready by the time the semester started. Training on AIS was also incorporated to new student orientation program. However, at the end of 2005, usage level remained low despite improvements and communication efforts.

The purpose of this research is to study consumer adoption of technology by using the case of Academic Information System in School of Business and Management ITB. The Unified Theory of Acceptance and Use of Technology Model or shortly UTAUT from Venkatesh *et al.* (2000) was adapted and validated to fit the context of technology adoption in this research. To provide further understanding of consumer behavior in technology adoption, this study involves different user groups which consisted of students and lecturers. Simultaneous interactions among factors will also be examined by using Structural Equation Modeling in the data analysis.

2. Unified Theory of Acceptance and Use of Technology Model

A consumer's adoption of innovation resembles the consumer decision making sequence in which consumer recognize problem, search for information to solve it, evaluate the alternatives and choose the product from those alternatives. However, every customer has his/her own adoption of innovation rate. About one-sixth of the population can be considered innovators and early adopters who are quick to adopt new products. On the opposite side, also one-sixth of the population, there are laggards who are very slow. The rest is called late adopters, who is somewhere in the middle (Solomon, 2004).

According to Higgins and Shanklin (1992) and Davidow (1986), there are four predominant types of technological fear that can act as barriers to purchase: fear of technical complexity, fear of rapid obsolescence, fear of social rejection and fear of physical harm. At the technology side, there are factors associated with technology that may foster technology adoption. Those are relative advantage, compatibility, complexity, trialability, and observability (Solomon, 2004).

Further studies have been conducted to acquire better understanding about how consumers adopt high technology products resulting in different models of technology adoption which are Theory of Reasoned Action, Technology Acceptance Model, Motivational Model, Model of PC Utilization, Theory of Planned Behavior, Innovation Diffusion Theory and Social Cognitive Theory. Factors that influence consumer's behavior in accepting technology were elaborated in those models.

Venkatesh *et al.* (2003) conducted a study to integrate models within those theories to predict people behavior in relation to technology adoption resulting in the Unified Theory of Acceptance and Use of Technology (UTAUT) as seen in Figure 3. This model was considered as a valid and updated model of technology adoption in literature (Anderson *et al.*, 2006).
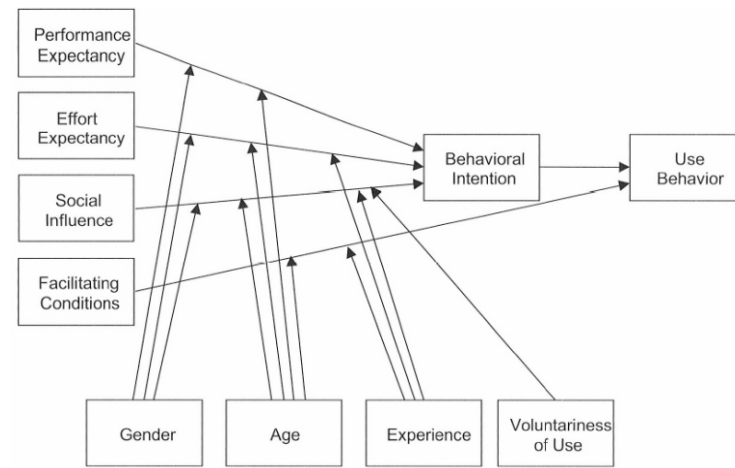
Figure 3. UTAUT Model (Source: Venkatesh et al., 2003)

Performance Expectancy

Venkatesh et al. (2003) defined performance expectancy as the degree to which an individual believes that using the system will help him or her to attain something in his/her job. Individuals evaluate technology as an external factor that could support his or her performance. Evaluation result, combined with other factors, will induce individual's intention to adopt the system. Performance Expectancy also contains measurement of how users perceive the technology as better than using its precursor and how they notice the consequences of their behavior.

The authors informed that performance expectancy was moderated by gender and age. Different gender roles and socialization shape individuals and influence their thinking process. More task-oriented people and men are likely to be more salient in their expectation of performance (Venkatesh *et al.*, 2003). Individual decision making process is also formed by his or her age and this also exists in technology adoption context (Morris and Venkatesh, 2000).

Effort Expectancy

Effort expectancy is a measure of the degree of effort an individual needs to use technology. In the other words, effort expectancy is defined as the degree of ease associated with the use of the system because individual needs to do particular adaptation before he/she can use the technology.

Venkatesh *et al.* (2003) theorized that effort expectancy was moderated by gender, age and experience. Cognitions which related to gender roles is expected to play a role in how individual perception of effort (Venkatesh and Moore, 2003), while increased age is associated with difficulty in processing complex stimuli and allocating information (Plude and Hoyer, 1985; in Venkatesh *et al.*, 2003).

Social Influence

Venkatesh *et al.* (2003) defines social influence as the degree to which individuals use technology because they want to be perceived as socially respectable persons in their community.

Social Influence is moderated by gender, age, experience and voluntariness of use (Venkatesh *et al.*, 2003). Several research showed that social influence is significant when use of technology is mandated (Venkatesh and Davis 2000; Hartwick and Barki, 1994). Since women have more tendency to be influenced by society (Miller, 1976; Venkatesh *et al.*, 2000) and older people have tendency to affiliate (Rhodes 1983) then these constructs became moderating factors in the model.

Facilitating Conditions

Physical and organizational environment were considered to have an influence on individual's decision to use technology. Theory of Planned Behavior stated that although behavioral intention is high, individual will not perform the behavior if he or she believes that he or she has limited control over it. Facilitating conditions construct integrated external constraint that could affect adoption. It is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh *et al.*, 2003). Therefore, this construct directly have an effect on behavior.

The effect of facilitating conditions is expected to increase with experience and age. Bergeron *et al.* (1990) research showed that its effect was expected to increase with experience while older age workers attached a higher degree of importance to receiving help and assistance in their job (Hall and Mansfield, 1975).

Behavior Intention

UTAUT was based on Theory of Reasoned Action, in which user's behavior intention is used to predict use behavior. Behavior intention is defined as willingness of target users to start using a system or to increase the use of the systems. Although facilitating conditions influence is not significant on behavior intention, Venkatesh *et al*'s model empirically validated that it has direct effect on technology usage behavior.

Use Behavior

Use behavior is related with the interaction between users and systems in use. It defines the frequency of use and everything done by users when accessing or using the systems.

3. Academic Information System of School of Business & Management ITB

Academic Information Systems (AIS) was developed to support learning activities in SBM ITB. It connects not only students and lecturers, but also the school administrative staff. Each user has its own specific role and authorized personally to each role. AIS is designed as a part of SBM information system, and in the future will be integrated to ITB information system.

In the AIS, students are basically in the receiving end of the system. They can download syllabus, course materials, added materials and assignments. Administrative affairs are also provided such as checking presence, announcement, grades and schedule. Assignments can be uploaded through this site if the lecturer enables the link. Students are required to update their personal information through AIS. Use of AIS is voluntary for students and they usually use this system to check their level of presence.

Lecturers, occupied an important role to provide AIS content. Syllabus and course materials have to be uploaded at least one week before the semester starts. Lecturers must also update their materials, whenever there was any change. AIS offers a web-based data storage in which lecturers can upload students' daily grade such as quizzes, assignment and class participation grades. Applying experiential learning, students' presence are considered central in the grading system. Lecturers can check this through AIS and decides whether particular student needs extra assignment to make up to their absence in class. Other service provided such as posting class announcement and collecting students assignments online. Like students, lecturers are not mandated to use AIS.

4. Research Model

Despite publication and training effort, usage level of Academic Information System (AIS) in SBM ITB remained low. Unified Theory of Acceptance and Use of Technology Model is used in this paper to describe factors affecting user behavior of AIS. Samples consisted of students and lecturers, which are not mandated to use AIS. Therefore, voluntaries of use are not incorporated in the research model.

According to UTAUT Model, intention of using technology is determined by individual's expectancy of technology's performance, expectancy of individual's effort to adapt to the technology and his/her social environment. Behavior Intention, along with Facilitating Condition, is the determining factors of use behavior. UTAUT was formulated from conceptual and empirical similarities across previous models. This model was also empirically validated using original data of said models and cross validated with new research (Anderson *et al*, 2006). However, each independent factor was tested separately, therefore there was no description of how these constructs simultaneously influence behavioral intention of using AIS.

The functions mentioned in section 3 will be related to the use behavior construct in UTAUT model. Additionally, the frequency of using AIS will also be part of users' behavior in this research. Meanwhile, the behavior intention is defined as the degree of inclination of the students and lecturers in using or intensifying the usage of AIS in SBM ITB.
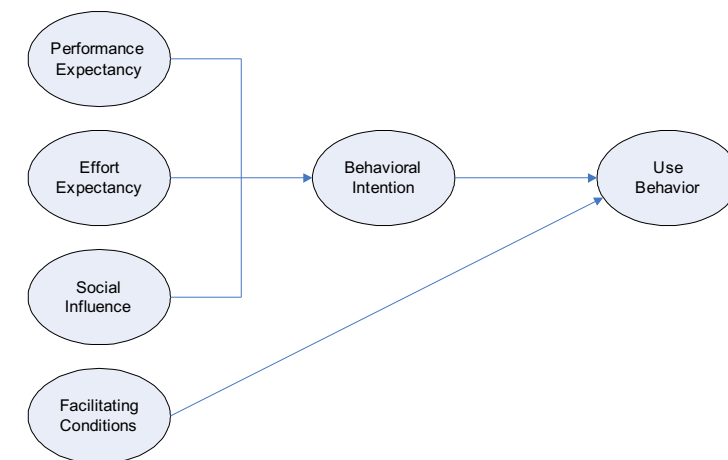

Figure 5. Research Model

The following hypotheses will be tested in relation to the research model above:

H1: *Performance Expectancy, Effort Expectancy and Social Influence will simultaneously have a significant positive influence on Behavioral Intention to use Academic Information System.*

H2: *Behavioral Intention and Facilitating Condition will simultaneously have a significant positive influence on Use Behavior of Academic Information System.*

Structural Equation Modeling will be used to test simultaneous effect of factors mentioned above on behavioral intention. This method can also provide each construct's level of significance which will be required for examining moderating effects of gender, age, and experience.
Individual decision making process is also formed by his or her age and this also exist in technology adoption context (Morris and Venkatesh, 2000). Other research showed that increased age is associated with difficulty in processing complex stimuli and allocating information (Plude and Hoyer, 1985; in Venkatesh *et al.*, 2003). UTAUT research results showed that age have stronger effect on younger workers' performance expectancy. For older workers, stronger effect was confirmed on effort expectancy and social influence. Age also moderates facilitating condition in which its effect is stronger on older workers. Venkatesh *et al*.'s research provides evidence of gender as moderating factor for performance expectancy, effort expectancy and social influence. Their research showed that performance expectancy effect on behavior intention will be stronger for men. Therefore, two hypotheses can be arisen as follows:

H3: *The influence of performance expectancy, effort expectancy and social influence on the intention to use AIS will be moderated by gender, age, and experience.*

H4: *The influence of facilitating conditions on the use behavior of AIS will be moderated by age and experience.*

Effect of social influence and facilitating condition will be stronger with limited experience. Bergeron et al. research showed that facilitating condition effect is expected to increase with experience (Venkatesh *et al.*, 2003).
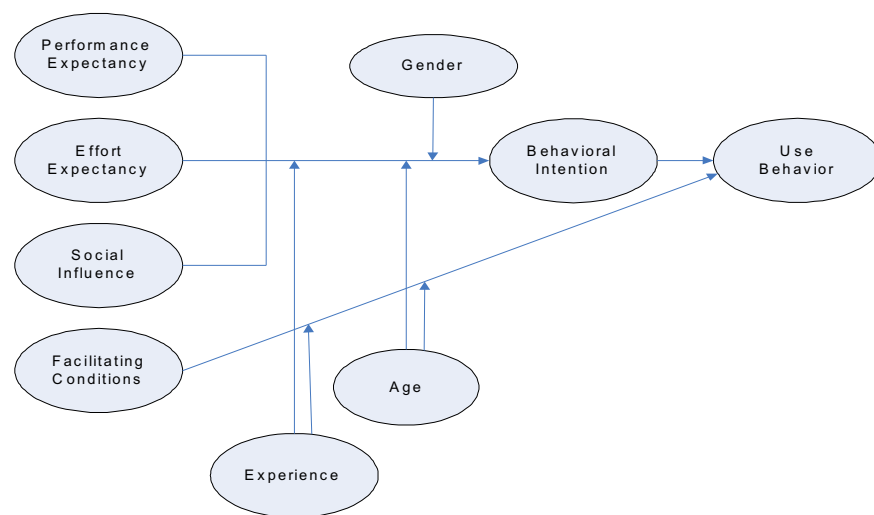

Figure 6. Research Model with Moderating Factors

5. Research Methodology

The Unified Theory of Acceptance and Use of Technology model was used to describe consumer acceptance of Academic Information System of SBM ITB.

Literature study was conducted to develop theoretical foundation. Questionnaire was designed by adapting questions from original UTAUT research to current setting. Preliminary survey was conducted to test the measurement tools. Structural Equation Modeling is used to empirically test UTAUT model in order to recognize factors influencing AIS acceptance. This method was chosen because of its ability to perform simultaneous examination of numerous interdependence relationships.

Two-step modeling approach is conducted in SEM, measurement model was developed first before structural model was constructed. To get the best measurement model, some modifications were made by excluding insignificant manifest variables. This model was then tested for its reliability using Cronbach-alpha Coefficient test. Data was gathered by distributing questionnaire to lecturers and undergraduate students of SBM ITB.

There are also two steps in examining the structural model. Basic research model (Figure 5) will be tested first to determine which factor has the most significant influence on behavior intention and use behavior. The result will be used to develop further hypothesis on effect of moderating factors (age, gender and experience) to behavior intention and use behavior.

6. Validity and Reliability Test

Confirmatory factor analysis was performed to test variable validity. Each manifest variable was tested for its significance using one-tailed t-test. Manifest variable with t-value less than 1.96 was considered not significant and not included in the model. Table 1. lists the summary of validity and reliability test of each variable.

Variable	Range of T-value	Cronbach's Alpha
Performance Expectancy	6.90 - 10.85	0.867
Effort Expectancy	7.39 - 9.92	0.882
Social Influence	7.39 - 9.92	0.895
Facilitating Conditions	7.55 - 10.03	0.725
Behavioral Intention	6.66 - 9.96	0.858

Table 1. Summary of Validity & Reliability Test

7. Descriptive Statistics

There were 288 questionnaires collected from 350 given out to students, yielding a response rate of 82%. However, after preliminary screening there were only 263 valid responses used in data analysis. Lecturers were given the same set of questionnaire with list of used features accustomed to their role. From 15 sets handed out, 12 responded which generated response rate of 80%. All responses from lecturers passed the screening process and used in the next step.

Almost all respondents were students (95.6%) and only 4.4% were lecturers. This percentage corresponded with age variable which consisted of 95.6 % samples aged below 25 years old. Other age groups were 25-35 years old, 36-45 years old and older than 45 years old, each 1.5% of sample. All older age groups belong to lecturers. Gender showed a more balanced ratio (54.9% men to 41.8% women). However, only 2 lecturers are women in all 12 samples of lecturers (16.7%).

Respondents experience with technology was assessed through the number of years AIS and internet were used. AIS was introduced at the end of 2004, however, the survey showed that most users had experience below 2 years (44.4% used it for 1-2 years, 43.3% used it for less than a year). Only 11.6% responded with 2-3 years of use. Designed as web-based application, this research used familiarity with internet as measurement of experience. Data presented 60.7% respondents used internet for more than 5 years, with 27.6% belong to the category of 3-5 years of internet use. It can be assumed that AIS users were familiar with internet, however almost half of the respondents might not be too accustomed with AIS.

Usage behavior was measured with frequency of accessing AIS and percentage of features used. It was shown that 44.4% access AIS once every week, while others accessed it once every 2-4 weeks (31.3%). Interestingly, frequency of AIS use for most lecturers was very low. More than half of respondents (58.3%) used it whenever they were required to do so. Most lecturers only accessed AIS at the beginning

of the semester to upload their course syllabus, course schedule and materials (83.3%, 91.7% and 75%, respectively), some of them said that they distributed newer materials directly to students. This corresponded with lecturers use behavior in AIS features. Other data illustrated lack of features used by lecturers in which it averaged at about 30% of all features. All samples showed the average of 21%-40% of used features (46.5% of all samples) with 32% of respondents showed less than 20% of feature use. Almost all of the students (94.8%) used AIS to monitor their presence level, with other features such as downloading course materials and course syllabus also accessed (69% and 68.3%). Usage behavior variable showed that its frequency of use was quite low for lecturers but moderate for students. Features used presented a low usage in which most users only use less than 40% of all features available.

8. Basic Research Model

This research aims to examine factors influencing Behavior Intention and Usage Behavior of Academic Information System of SBM. Analysis on basic model was conducted first to determine which factor has the most significant influence to behavior intention. This basic model only examined main constructs of original model which are Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Behavioral Intention (BI) and Facilitating Conditions (FC). Estimation result will be used to develop hypothesis regarding moderating variables.

H1 suggested that behavioral intention of using Academic Information System is positively influenced by Performance Expectancy, Effort Expectancy and Social Influence. This was followed by the second hypothesis which proposed that usage behavior of AIS is positively influenced by behavioral intention and facilitating condition. Factor loading (λ) was used as indicator of strengths of relationship between dependent and independent variables. Value of R2 was used as measurement of variance explained by the independent variables.

Structural Equation Modeling allows estimation of interdependence relationship to be performed simultaneously. Therefore, analysis of variables influencing technology usage behavior (H2) was conducted concurrently with analysis of variables influencing behavior intention of using technology (H1). Figure 7 showed path diagram of estimation result and its equation was shown below:

$$BI = 0.26*PE + 0.71*EE + 0.028*SI \ (R^2 = 0.43)$$
$$USB = 0.82*BI + 0.092*FC \ (R^2 = 0.75)$$

The behavioral intention (BI) loading factors confirmed Venkatesh et al.'s findings that Performance Expectancy and Effort Expectancy influence user Behavior Intention of using technology. Effort Expectancy has the strongest influence with λ equals to 0.71. Statistical significance of each variable was estimated and the results showed that PE and EE were statistically significant with t-value of 2.25 and 4.27, respectively. Aligned with its loading factor estimation, Social Influence showed that it has no significant influence on behavioral intention with t-value of 0.028. Thus, H1 is not supported. This model explained 43% of the variance in intention of using AIS, as indicated in the value of R^2.

H2 tested the positive significant influence of Behavioral Intention (BI) and Facilitating Condition (FC) on Usage Behavior (USB). Loading factors showed that Usage Behavior was influenced by user Behavioral

Intention of using technology while Facilitating Condition coefficient showed that its influence was very small. Statistical significance result showed that these variables were not significant with t-value of 1.31 and 0.60. Thus, H2 is not supported. However, this model was better than the Behavior Intention model at explaining the variance in usage behavior of AIS, as indicated with the value 0.75 (R^2).
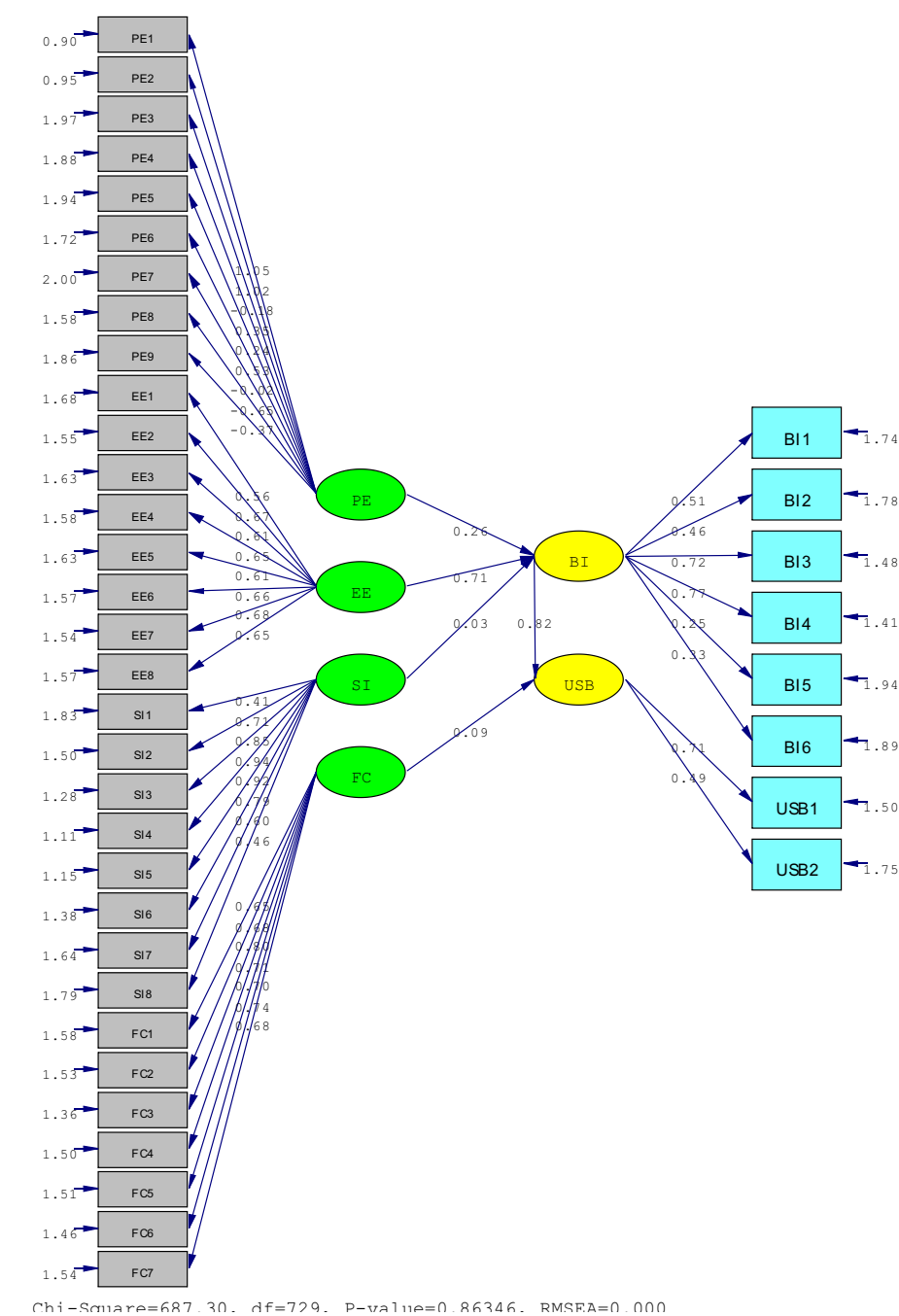

Figure 7. Basic Model Results

Goodness of fit statistics test was performed to examine data suitability with analyzed model. Likelihood-ratio chi-square statistic was low as shown by the value of chi-square to degree of freedom (687.30 to 729). This confirmed that there is no significant difference between observed data and estimated model. Goodness-of-Fit Index value of this model is 0.89 which described model fitness to predict covariance and correlation matrix. It can be concluded that this basic model was suitably represented relationship among variables.

9. Research Model with Moderating Factors

Estimated model was used to develop further test on effect of moderating factors (age, gender and experience) to behavior intention and use behavior. Due to limitations in using SEM as method of analysis, modifications were made in order to adjust number of variables and valid data. For each construct, only 4 of the highest loading factors were included. Lack of sufficient data for older age, age as moderating factor was tested only on data of younger respondents. Table 2 lists the estimated model with moderating factors.

Moderating Factors	Equation (with t-value)
Gender (Women)	BI = 1.18*PE + 1.36*EE + 0.18*SI (0.019) (0.019) (0.020) USB = 0.89*BI + 0.25*FC (0.015) (0.022)
Gender (Men)	BI = 0.20*PE + 0.55*EE + 0.058*SI (1.21) (2.62) (0.40) USB 0.39*BI + 0.63*FC (1.01) (1.14)
Age (Young)	BI = -0.19*PE + 0.30*EE – 0.55*SI (1.25) (2.10) (0.75) USB = 0.23*BI + 0.50*FC (3.12) (5.80)
Experience	BI = 0.45*PE + 0.74*EE + 0.015*SI (2.57) (3.33) (0.12) USB = 0.49*BI + 0.62*FC (0.45) (0.46)

Table 2. Estimation Results for Research Model with Moderating Factors

Findings from Basic Model estimation showed that Effort Expectancy has the most significant influence on Behavioral Intention as indicated from loading factor value (0.71) and t-value (4.27). Therefore, factors moderating effort expectancy might also give stronger effect on behavioral intention and, eventually usage behavior.

Compared with other models, loading factors of all coefficients are higher (1.18 for PE, 1.36 for EE and 0.18 for SI) in gender (women) as moderating factor. Interestingly, Social influence loading factor showed substantial increase from 0.028 to 0.18. Stronger effect was also indicated in higher loading factors for behavioral intention (0.89) and facilitating condition (0.25) as independent variables of usage behavior. This was aligned with Venkatesh *et.al*. (2003) findings in which effect of Effort Expectancy was stronger on women.

Estimated model for younger age as moderating factor showed a weaker result as indicated in its lower loading factors (-0.19 for PE, 0.30 for EE and -0.55 for SI). This effect was also shown in usage behavior estimation with loading factors for usage behavior as dependent variable (0.23 for BI and 0.50 for FC). However, its t-value showed that effect of facilitating condition and behavioral intention significantly influence their usage behavior as indicated in their t-value (3.12 for BI and 5.80 for FC).

Experience showed stronger effect on performance expectancy and effort expectancy in behavior intention model as indicated in higher loading factors (0.49 for PE and 0.74 for EE). Usage behavior model showed considerably stronger effect on facilitating conditions, shown by loading factor of 0.62, This result is also aligned with Venkatesh *et al*. (2003) findings in which effect of experience was stronger on facilitating condition.

H3 suggested that factors of behavioral intention (PE, EE & SI) will be moderated by gender, age and experience. Estimated result showed that influence was stronger on women as moderating factor, weaker on younger age as moderating factor and stronger on experience as moderating factor. Thus, H3 is supported.

Results on age and experience as moderating influence on facilitating conditions showed that influence is stronger on younger age as moderating factor and weaker on experience as moderating factor. Thus, H4 is supported.

10. Discussion

Our findings confirmed UTAUT model which was indicated by model fitness with observed data. Compared with other factors, Effort Expectancy was the most important factor influencing behavior intention of using AIS. Both faculty members and undergraduate students believed that effort spend to familiarize themselves with technology was too much compared to its benefits. Therefore, it is important to develop a system that is user-friendly and not complicated. Extensive trainings are required to minimize confusion and uneasiness in using AIS.

Performance Expectancy showed an important influence on behavior intention of using AIS. Users believed that perceived benefits of using AIS can help them attain their goals, and this contributed in their evaluation to use AIS. There was no available data, but preliminary evaluation stated that students low usage feature might be attributed to faculty member usage behavior of using AIS such as updating course material and submitting assignment through this portal as opposed to directly giving them to students or administration staffs. To increase its usage, AIS benefits should be communicated from the beginning through training and regular updating so that its user, particularly students, continuously receive AIS benefits.

Social Influence was not significantly affecting users' behavior intention to use AIS. Samples consisted of faculty and undergraduate students who are not mandated to use technology. According to Venkatesh et al. (2003) social influence was a factor when use is mandated. This finding was also aligned with Anderson *et al*. (2006) which use UTAUT model on adoption of PC tablet by faculty member.

Research finding also confirmed that behavior intention was an important factor of usage behavior. However, facilitating condition was shown not important. This might be attributed to the fact that most respondents used internal connection to access AIS, thus had no problem with internet connection. Several IT officers are also always available whenever faculty member needs assistance in using AIS. AIS was a simple web-based application that could be accessed through common web-browser such as Internet Explorer, therefore conflict with other systems was minimized.

As the most important factor affecting behavior intention, moderating factors influencing effort expectancy presented a considerable influence on behavior intention. This was showed in gender as moderating effect. Aligned with Venkatesh *et al*. (2003), effort efficiency showed strongest effect on women. Stronger effect from women as moderating factor was also indicated in Social Influence. This also confirmed Venkatesh *et al*.'s research in which social influence effect was stronger on women. However, due to small sample of older women, this research was unable to do further examination of age and gender on technology adoption. Nevertheless, women must be given extra attention so that they are more inclined to use technology.

Insufficient number of sample on older age respondents caused inability to perform test on effect of older age as moderating factor. Findings showed that younger age had weaker effect on factors of behavior intention. Considerable weaker effect was indicated in performance expectancy and social influence, such that they have a negative influence on behavior intention. However, this effect was not significant. Younger age has stronger effect of facilitating conditions on usage behavior, such that it exceeded behavior intention effect. Therefore, it is important to provide students with sufficient support such as internet connection, training, etc.

Experience with internet and AIS showed a stronger effect on facilitating conditions. This finding was aligned with Venkatesh et al. (2003), AIS was web-based information system with common interface as any other web-sites. Majority of AIS user have used internet for more than 5 years which might explain that they were quite familiar with how AIS worked.

Conclusions

This study aims to describe factors that influence consumer intention of using technology and how that intention contributed to technology usage. Results showed that performance expectancy and effort expectancy significantly influence behavior intention of using Academic Information System. Age, gender and experience as moderating factors made effect stronger for younger age, women and experienced user. Behavior Intention influenced usage behavior, while facilitating conditions influence was stronger on younger users.

Effort expectancy was the most important factor influencing behavior intention of using AIS. SBM administration should focus on training its user so that they are more familiar with how it works. Women should be given more attention because effort expectancy has stronger effect with women. SBM Administration should also maintain their supporting facilities to keep students to use the system.

There were several limitations in this study. Further examination on how age, gender and experience worked simultaneously as moderating factors were unable to be conducted due to limited number of samples from older age category. Following research should include more samples from various categories to study this effect. This study should also be expanded to include data from other departments and graduate students to further explain use of technology in academic setting.

References

Anderson, John E., Schwager, Paul H., Kerns, Richard L. (2006), "The drivers for acceptance of tablet PCs by faculty in a college of business", *Journal of Information Systems Education*, Vol. 17 No. 4, p. 429.

Brown, Kelli M. (1999), *Social Cognitive Theory*. Retrieved December 29, 2006 from http://hsc.usf.edu/~kmbrown/Social_Cognitive_Theory_Overview.htm

Brown, Kelli M. (1999), *Theory of Reasoned Action/Theory of Planned Behavior*. _____ Retrieved December 29, 2006 from http://hsc.usf.edu/~kmbrown/TRA_TPB.htm

Higgins, Susan H., Shanklin, William L. (1992), "Seeking mass market acceptance for high technology consumer products", *The Journal of Consumer Marketing*, Vol. 9 No. 1, p. 5

Morris, M.G., Venkatesh, V. (2000), "Age differences in technology adoption decisions: Implications for a changing work force", *Personnel Psychology*, Vol. 53 No. 2, p. 375

Pajares, Frank (2002), *Overview of social cognitive theory and of self-efficacy*. _____ Retrieved December 29, 2006 from http://www.emory.edu/EDUCATION/mfp/eff.html

Solomon, Michael R. (2004), *Consumer Behavior: Buying, Having and Being*, Pearson-Prentice Hall, New Jersey, p. 293

Venkatesh, Viswanath, Morris, Michael G., Davis, Gordon B., Davis, Fred D. (2003), "User acceptance of information technology: Toward a unified view", *MIS Quarterly*, Vol. 27 No. 3, p. 452

Venkatesh, Viswanath, Morris, Michael G. (2000), "Why don't men ever stop to ask for direction? Gender, social influence, and their role in technology acceptance & user behavior", *MIS Quarterly*, Vol. 24 No. 1, p. 115