

The Relationship between Attitude and Frequency, Efficiency for Using Information Technology as Teaching Tools: A Case Study of Bangkok University Faculty.

Bootsara Prakobtham

ABSTRACT

The objectives of this research were to study attitude, frequency, skills, and efficiency of using information technology as teaching tools by Bangkok University's faculty. The research hypothesis was whether there was a significant relationship between attitude, frequency, and skills; and efficiency in using information technology (IT).

A survey questionnaire was employed. The population of this study were faculty members of Bangkok University of both City and Rangsit campus. The sample used in this research came from stratified random sampling by dividing the population into 9 Schools and 1 Institute. The quantitative data had been analyzed and yielded results of descriptive statistics, frequency, one-way analysis of variance (One-way ANOVA), correlation, and multiple linear regression analysis.

Research findings were as follows: Most of the selected subjects had a Master's degree. The frequency of using information technology was 4 days per week. They had a positive attitude towards using IT. They had average levels of efficiency and skills. No difference was found in terms of frequency, attitude and efficiency among the subjects, except the skills of the faculty members in the School of Engineering and Language Institute were different. The relationships between attitude and skill; attitude and efficiency; and skill and efficiency were found to be positively significant at the level of 0.05. The regression equation which predicted the efficiency of using information was shown below. $Efficiency = 0.720 + 0.315Attitude + 0.374Skill$

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปริมาณ เจตคติ ประสิทธิภาพ ทักษะความชำนาญในการใช้เทคโนโลยีสารสนเทศของคณาจารย์ในคณะต่างๆ ของมหาวิทยาลัยกรุงเทพ สมมติฐานของการวิจัย คือ ความสัมพันธ์ระหว่างตัวแปรทางประชากร และเจตคติต่อการใช้เทคโนโลยีสารสนเทศกับปริมาณและประสิทธิภาพการใช้งานเทคโนโลยีสารสนเทศในด้านต่างๆ

การวิจัยครั้งนี้เป็นการวิจัยเชิงสำรวจประชากรที่ใช้ในการวิจัย คือ คณาจารย์สายวิชาการที่รับผิดชอบงานสอนของมหาวิทยาลัยกรุงเทพทั้งวิทยาเขตกล้วยน้ำไท และวิทยาเขตรังสิตในปีการศึกษา 2547 โดยกลุ่มตัวอย่างที่ใช้ศึกษาครั้งนี้ได้ใช้วิธีการสุ่มตัวอย่างแบบแบ่งชั้นภูมิ (Stratified Random Sampling) โดยแบ่งประชากรออกเป็นกลุ่มๆ ตามคณะที่สังกัดทั้งหมด 9 คณะ และ 1 สถาบัน ซึ่งมีจำนวนคณาจารย์ทั้งหมด 392 คน เครื่องมือที่ใช้ในการวิจัย คือ แบบสอบถาม โดยแจกแบบสอบถามจำนวน 235 ชุด และได้รับกลับคืน 143 ชุด คิดเป็น 61% ของแบบสอบถามที่แจกทั้งหมด และวิเคราะห์ข้อมูลโดยใช้โปรแกรมสำเร็จรูป SPSS For Windows เวอร์ชัน 12.0 เพื่อคำนวณค่าสถิติเชิงพรรณนา ค่าความถี่ของข้อมูลเบื้องต้นการวิเคราะห์ความแปรปรวนแบบจำแนกทางเดียวค่าสัมประสิทธิ์สหสัมพันธ์ และวิเคราะห์สมการการถดถอยเชิงพหุ

ผลการวิจัยพบว่า คณาจารย์ส่วนใหญ่จบการศึกษาระดับปริญญาโท มีปริมาณการใช้งานเทคโนโลยีสารสนเทศโดยเฉลี่ย 4 วัน/สัปดาห์ มีเจตคติในเชิงบวกต่อการใช้งานประสิทธิภาพการใช้งานอยู่ในระดับปานกลางและมีทักษะความชำนาญอยู่ในระดับปานกลาง ปริมาณการใช้งานเทคโนโลยีสารสนเทศ เจตคติ และประสิทธิภาพของคณาจารย์แต่ละคณะไม่แตกต่างกัน สำหรับทักษะความชำนาญของคณาจารย์คณะวิศวกรรมศาสตร์และสถาบันภาษามีความแตกต่างกัน ปริมาณการใช้งานเทคโนโลยีสารสนเทศและเจตคติ มีความสัมพันธ์กับทักษะความชำนาญ ส่วนเจตคติและทักษะความชำนาญมีความสัมพันธ์กับประสิทธิภาพในการใช้เทคโนโลยีสารสนเทศ ซึ่งสมการที่ใช้ในการพยากรณ์ประสิทธิภาพการใช้งานเทคโนโลยีสารสนเทศ คือ ประสิทธิภาพ = $0.720 + 0.315$ เจตคติ + 0.374 ทักษะการใช้งาน

INTRODUCTION

Nowadays, most organizations in Thailand, for example, the Ministry of Information and Communication Technology or ICT founded in 2002, obviously put an emphasis on using IT. ICT has the main responsibility for encouraging people to apply IT. As IT is growing fast in Thailand, IT users become familiar with the tools applied in their education, work and so on. According to the National Statistic Office, Ministry of Information and Communication Technology report, the growth rate of Thai people owning a computer from year 2000 to 2002 increased from 5.75% to 9.6%. In addition, the number of Thais using computer in their jobs became 11.3 million. Moreover, many organizations consider IT as a basic function that causes educational institutions to use IT as teaching tools more and more.

Bangkok University, one of the most famous universities in Thailand, implements IT in teaching and provides personal computers for all faculty members. In addition, there are many IT systems for supporting both instructors and students such as e-learning, BU learning management system, etc. Due to many IT systems provided at Bangkok University, we would like to do research on using IT systems as teaching tools, to investigate whether they use these facilities in an efficient way or not. The findings will be beneficial for improving the future IT systems and the teaching management at Bangkok University.

OBJECTIVES

1. To study frequency of using IT by the BU faculty;
2. To study attitude of using IT by the BU faculty;
3. To examine skill of using IT by the BU faculty;
4. To examine efficiency of using IT by the BU faculty;
5. To find out problems and restrictions of using IT at Bangkok University; and
6. To investigate the relationship between frequency, attitude, and skill; and efficiency of using IT by the BU faculty.

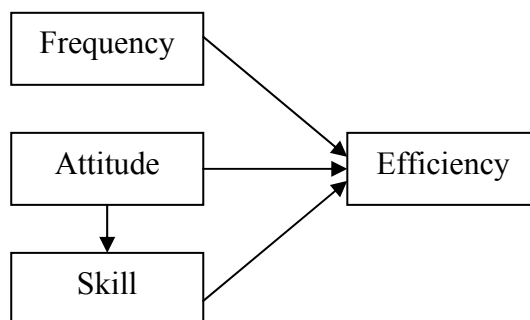
CONTRIBUTION OF STUDY

Contributions of study are to be a guideline for planning and developing IT at Bangkok University and to stimulate faculty members to learn and use more IT in teaching.

FRAMEWORK

1. The research studied the IT usage of the faculty members in both City and Rangsit campus of Bangkok University.
 2. The population of the research was faculty members who lecture at both City and Rangsit campus of Bangkok University.
 3. Variables in this research were as follows:
 - Independent variables were attitude, frequency, and skill toward using IT; and
 - Dependent variable was efficiency of using IT.
- The framework of this research is shown below:

Figure 1: Research Model



LITERATURE REVIEW

Most of the research has been done on using IT for supporting both the learning and teaching process of universities in Thailand. Ngampring (2002) found that most instructors would like to use efficient hardware and software taken care and maintained by the computer center staff. Jaritngam (2002) revealed that the results of using IT for education, both hardware and software, were in intermediate level. Wongthammakul (2001) found that the attitude had a connection with the quantity of using IT. Mahasilppaisarn (1982) found that if there were many quantities of using com-

munication systems, the positive attitude would increase. Grossman (1995) found that the positive attitude did not increase if staff had more experience in using IT. For the concept of problems in using IT, Jaritngam (2002) found that the problems of developing IT for education were hardware and software. Sangtaewtim (1999) stated that there were some hardware problems such as low-efficient and obsolete hardware. In addition, some instructors didn't have good knowledge and skill of using IT, and there were not enough tools and devices to support their teaching.

METHODOLOGY

Research Sample

The survey technique was used in this research. The population of research was all the faculty members teaching in both City and Rangsit campus of Bangkok University in Semester 2/2004 which can be classified as 9 Schools and 1 Institute including Business Administration, Accounting, Communication Arts, Humanities, Law, Economics, Science and Technology, Fine and Applied Arts, Engineering, and Language Institute. From the total population of 392, Yamane

(1970)'s theory was applied to use 60% of the total population. The sample size came out to 235. The stratified random sampling technique was employed to proportionally divide the faculty members from each department. The 143 questionnaires were completed from the 235 questionnaires. The obtained questionnaires of 143 respondents equated 61% of total faculty members sample size (see Table 1). The reasons for missing responses are because some of the faculty members are on leave to pursue their education, to write a text book, or other personal reasons.

Table 1: Summary of Population, Sample Size, and Respondent received

	Population	Sample Size	Respondent Received
1. Business Administration	57	34	27
2. Accounting	30	18	18
3. Communication Arts	69	41	20
4. Humanities	49	30	17
5. Law	14	8	5
6. Economics	16	10	8
7. Science and Technology	46	28	14
8. Fine and Applied Arts	35	21	9
9. Engineering	22	13	9
10. Language Institute	54	32	16
Total	392	235	143

Research Tools

This research design was quantitative approach. In order to achieve the purposes of this study, the researchers utilized a survey questionnaire as a research tools in both City and Rangsit campus. The questionnaire asked about attitude, frequency, skill, and efficiency for using IT, therefore; it was divided into 5 sections:

The first section inquired about their demographic background; including gender, experience, and level of education of the respondents.

The second section examined frequency of using IT; including frequency of using IT per week, frequency of using hardware, frequency of using software, and frequency of using network (both intranet and internet network).

The third section asked about attitude of using IT; including attitude of using hardware, attitude of using software, and attitude of using network (both Intranet and Internet network).

The fourth section asked about efficiency of using IT; including efficiency of using hardware, efficiency of using software, and efficiency of using network (both intranet and internet network).

The fifth section investigated skill of using IT; including skill of using hardware, skill of using software, and skill of using network(both intranet and internet network).

The questionnaire was created using a five-point Likert scale ranging from the most to the least.

According to Best (1978) [1], the meaning of each range is as follows:

1.00 – 1.50	The least
1.51 – 2.50	Less
2.51 – 3.50	Average
3.51 – 4.50	More
4.51 – 5.00	The most

Initially, a pre-test questionnaire was distributed to verify the meaning of the concept and content validity in a group of lecturers at other universities which are not selected to participate in this study. Cronbach's alpha was used for checking reliability. The coefficient for the instrument was 0.80.

Data Analysis

The researchers collected data from the survey questionnaire and used the SPSS for windows program version 12.0 to examine the descriptive statistics and summarize the data.

Step 1 Descriptive statistics: analyze demographic background, frequency, attitude, efficiency, and skill of using IT to examine the minimum, maximum, mean, and standard deviation.

Step 2 Frequency table and Cross tab table: show the characteristics of the sample.

Step 3 One way analysis of variance (One-way ANOVA): confirm mean difference in frequency, attitude, efficiency, and skill of using IT between the clusters of schools to be statistically significant (.05).

Step 4 Correlation coefficient: compute all concerned variables in this study.

Step 5 Multiple linear regression analysis: determine the independent contribution of the efficiency of using IT to the prediction of efficiency.

The basic regression equation can be specified as follows:

$$\text{Eff} = \beta_0 + \beta_1 \text{Freq} + \beta_2 \text{Att} + \beta_3 \text{Skill}$$

where

Eff_i is efficiency of using IT

β_0 is constant of regression equation

$\beta_1, \beta_2, \beta_3$ are multiple regression coefficients

Freq is frequency of using IT

Att is attitude of using IT

Skill is skill of using IT

RESULTS

The results of the case study research were as follows:

The frequency of using information technology was 4.71 days per week. Efficiency of using information technology was 3.23. Attitude of using information technology was 4.18 and Skill of using information technology was 3.25 (see Table 2).

Table 2: Descriptive statistics show the mean, SD, minimum, and maximum of concerned variables

Variable	Mean	SD	Min	Max
Frequency per week	4.71	1.06	1.57	7.00
Efficiency of using IT	3.23	0.60	0.92	4.68
Attitude of using IT	4.18	4.18	3.00	5.00
Skill of using IT	3.25	0.49	2.15	5.00

Most of respondent were female and most of the selected subjected had a Master's degree classified by campus (see Table 3).

Table 3: Frequency table shows sample size classified by campus

	Campus	
	City	Rangsit
Gender		
Male	13.5%	16.3%
Female	23.4%	46.8%
Education		
Bachelor	2.8%	4.3%
Master	29.8%	56.0%
Ph.D.	4.3%	2.8%

The researchers tested hypotheses by comparing means using one-way ANOVA analysis with the LSD Post hoc test for multiple comparisons.

- Frequency of using IT classified by department
F=1.472(p>0.05) df = 9 for between groups, 127 for within group.
- Attitude of using IT classified by department
F=0.924(p>0.05) df= 9 for between groups, 130 for within group.
- Efficiency of using IT classified by department
F=1.762(p>0.05) df = 9 for between groups, 131 for within group.
- Skill of using IT classified by department
F=3.128 (p<0.05) df= 9 for between groups, 123 for within group.

The faculty members from School of Engineering have better skills than those from Language Institute (p<0.05). No difference was found in terms of frequency, attitude, and efficiency of using IT of every department although the skills of faculty members from School of Engineering and Language Institute were different.

The relationships between concerned variables findings were as follows: frequency had positive correlation with skill (r=0.261, p<0.01); attitude had positive relationship with skill and efficiency of using IT (r=0.169, p<0.01); and skill had positive correlation with efficiency (r=0.354, p<0.01). The analysis was done by using the Pearson correlation method. The following table summarizes the relationship between the constructs as follows:

Table 4: Correlation Coefficient

	Frequency	Attitude	Skill	Efficiency
Frequency	-			
Attitude	.163	-		
Skill	.261**	.169*	-	
Efficiency	.025	.265**	.354**	-

Note: ** = p<0.01

* = p<0.05

From the conceptual framework, the researchers determined the independent contribution of the efficiency of using IT. The regression equation which predicted the efficiency of using information was shown below.

$$\text{Efficiency} = 0.720 + 0.315\text{Attitude} + 0.374\text{Skill}$$

CONCLUSION

This research examined the relationship between attitude, frequency, and skill; and efficiency of using IT in many dimensions including hardware, software, and network. The BU case study research not only examined the relationship between concerned variables, but also predicted efficiency of using IT from regression equation. The results of this empirical study suggested that the university should provide new IT training programs for faculty members, update specification of hardware equipment more efficiently, and solve the problems of connecting an Internet lease line from other places.

MANAGERIAL IMPLICATION

The results can be used to improve the budgeting and to plan policies in order to better improve the efficiencies of using IT. The strategic planning in IT and communication should be developed. The university should arrange short courses for faculty members to learn how to improve their daily work with IT facilities by using the university's IT systems for learning and teaching. The university should also support faculty members in learning new hardware and software in order to use new IT facilities efficiently.

FURTHER RESEARCH RECOMMENDATION

Future research should focus on comparing using IT for normal teaching and Internet learning. The research of using IT in management of education institutions would be interesting to study. It is also crucial to study how faculty members use IT facilities for educational services. The study of Internet services of Thai educational institutions can

better improve the understanding of IT users. Problems and limitations in using IT in educational institutions for both personnel management and policy management are also worth to study.

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Ms. Bootsara Prakobtham received a M.S. (Information System and Management) from National Institute of Development Administration (NIDA) at Applied Statistics (1999) and a B.S. (Statistics) from Burapha University (1995). She is a full-time lecturer, Department of Business Computer, School of Business Administration at Bangkok University. Her publication is Information Technology. Her area of interest in research is information technology and internet.