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PROFILING AND UNDERSTANDING OF UNIVERSITI UTARA MALAYSIA STUDENT ACCEPTANCE OF AND ENTHUSIASM TOWARDS ICT

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ABSTRACT

Information Communication Technology (ICT) has flourished in almost all sectors i.e. communication, entertainment, education, etc.. In education, ICT is used to maximize educational potential, and it is now widely used as a teaching and learning tool. Nevertheless, the literature seems to suggest that there is still a lack of understanding particularly of student acceptance of and attitude towards ICT in general. This research was an attempt to understand Universiti Utara Malaysia student acceptance of and attitude towards ICT. Among the research objectives of this study were: to profile ICT users at Universiti Utara Malaysia, to determine the importance of ICT usage training to users, to examine student acceptance of, attitudes and enthusiasm towards ICT; and to study if differences in attitude towards ICT exist between gender, academic achievement, ownership of personal computer and ownership of personal computer with ICT facilities. The positive acceptance of students of ICT found in this study reinforces the need for institutions of higher learning in particular and ICT service providers in general to consider providing more and better ICT facilities to its clients. Since training is perceived to be beneficial, the opportunities and diversity of training on ICT usage must be given a priority. To conclude, adequate provisions of ICT facilities and training combined with positive student acceptance of ICT may kelp an institution achieve its goal of produce an information rick and computer literate students.

ABSTRAK

Ledakan informasi komunikasi teknologi (ICT) telah berkembang dalam pelbagai sektor contohnya komunikasi, hiburan, pendidikan, dan lain-lain lagi. Dalam sektor pendidikan, ICT digunakan untuk memperluaskan lagi potensi pendidikan, dan kini ianya digunakan secara meluas sebagai alat pengajaran dan pembelajaran. Namun, literatur menunjukkan masih banyak yang tidak difahami berhubung dengan ICT khasnya berhubung dengan penerimaan akan dan sikap pelajar terhadap ICT. Antara tujuan kajian ini dijalankan adalah: untuk memahami profil pengguna ICT di Universiti Utara Malaysia, untuk mengenalpasti kepentingan latihan ICT kepada pengguna, untuk menyiasat penerimaan akan, sikap dan enthusiasm pelajar terhadap ICT, dan akhirnya untuk mengkaji sekiranya terdapat perbezaan sikap pelajar terhadap ICT oleh jantina, pencapaian akademik, pemilikan komputer peribadi, dan pemilikan komputer peribadi yang mempunyai akses kepada kemudahan ICT. Penerimaan positif di kalangan responden terhadap ICT dalam kajian ini menunjukkan terdapatnya keperluan bagi institusi pendidikan tinggi amnya, dan khasnya kepada pembekal kemudahan ICT untuk meningkatkan kemudahan ICT kepada pengguna. Memandangkan latihan kepada ICT membantu pengguna, peluang dan kepelbagaian latihan ICT perlu diberi keutamaan. Sebagai kesimpulan, kemudahan dan latihan ICT yang lebih baik disertakan dengan penerimaan dan sikap positif pelajar atau pengguna terhadap ICT boleh membantu institusi mencapai matlamat untuk menghasilkan pelajar yang kaya dengan maklumat dan celik komputer.

INTRODUCTION

Predicting the future is never an easy task. Nevertheless, as Furlong et al. (2000) pointed at:

> "...the most cautious amongst us would probably agree that whatever shape the curriculum of the future takes, information and communication technologies (ICT) will be central(p.91).

In recent years innovative changes have been introduced in primary, secondary, vocational and tertiary education in the desire for educational improvement and the commitment to extend education to all. *Information and communication technology* play an important role in gearing the education system for the future both in terms of improving and extending education opportunity to more people.

Education today is vastly different from the education received by our parents. Bridges(2000:p.40) claims that "...students' experience of 'university life' and the kind of learning which takes place ...is very different from the kind of experience available in a traditional university setting". The development of different modes of teaching and learning-correspondence education, direct learning, adult education, distributed learning, distance education, perhaps later digitalized education—all contribute to the complexity of today's education.

In a nutshell, Information Communication Technology (ICT) has flourished as a medium of communication, entertainment, education and as a tool for commercial success. Inevitably, computer technology, softwares, hardwares, & applications would be part of our everyday life — in schools, offices, homes, etc.. Universally, the number of computer users and ICT subscribers are rising. In Malaysia for example, in the year 2000 a projection of 1.1 million was made as compared to 770 000 in 1999. By the year of 2002, the number of ICT subscribers is expected to reach 2 million (*News Straits Times*, 1999). The use of ICT is growing exponentially as more and more users (individuals, industries of different kinds, educational organizations, etc.) are recognizing the potential that it offers.

Nevertheless, the literature seems to suggest that there is still a lack of understanding particularly of student acceptance of and attitude towards ICT in general. This research is an attempt to these in understand Universiti Utara Malaysia.

STUDY OBJECTIVES

The objectives of this study are:

(a) To profile ICT users at the Universiti Utara Malaysia (UUM)
(b) To determine the importance of ICT usage training to users
(c) To examine student acceptance of, attitude and enthusiasm towards ICT
(d) To study if differences in attitude towards ICT exist between gender, academic achievement, ownership of personal computers and ownership of personal computers with ICT facilities.

LITERATURE REVIEW

It is obvious that over recent years the emergence of ICT has had a significant impact on the way that academics work. Certainly, much has been written about ICT. This literature review tends to fall into a number of categories. The largest of which deals with development and general definitions and terms relating to ICT facilities and what it provides (Gould, 1990; Stix, 1994). Another reasonably large body of research was on the impact of ICT on libraries and library services (Applebee, Clayton & Pascoe, 1997). This group of research discusses on how ICT can improve the services that libraries provide (Elson, 1994; O'Brien, 1994; O'Donoghue and Dickey, 1994). In relation to academic use of ICT, Newston-Smith & White (1995) have discussed how academics can be using ICT more effectively and how library staff might provide this assistance.

Past studies by Jefferies & Hussain (1998) and Joia (1997) have concluded that the usage of ICT as learning and teaching support in learning institutions is increasing. It was also found that the demand from students to access information through network and computers are growing exponentially in every part of the world (Debrecency & Ellis, 1998). Day by day, students are using ICT for both the academic and non-academic purposes (Joia, 1997). However, Jefferies & Hussain (1998) discovered that students tend to use ICT more towards entertainment rather than for academic use. They were found to surf ICT not only in schools and campuses, but also at other places such as libraries, cyber cafes and other locations that offer internet services (Jefferies & Hussain, 1998 and Applebee, Clayton & Pascoe, 1997).

With the increasing pervasiveness of ICT usage in the academic field, it has become increasingly crucial to gain better understanding on student acceptance of ICT. Attitude is defined in this research as the acquired habitual mental reactions towards ICT. The attitude of students in this study were ascertained through careful examination of student general awareness and willingness to accept ICT, their enthusiasm and willingness to respond to ICT services and activities.

Research investigating PC usage (PC is the medium to use ICT) revealed that there are several factors which were related to PC acceptance such as perceived usefulness, perceived use (Davis, Bagozzi & Warshaw, 1989), relative advantage, image, compatibility, demonstrability, vis-

ibility (Moore and Bensatat, 1993), complexity, job fit and facilitating conditions (Thompsons, Higgins & Howell, 1994).

There are some studies which have specifically examined gender issues in computing anxiety and attitudes, while others did so in the context of other research variables (Teo & Lim, 1996a). Such research by Qureshi and Hoppel (1995) found that demographic variables such as gender, status, GPA average, area of specialization, prior computer experience and anticipated future use of computers show significant differences in how students accept computers. On the other hands, Harrison and Rainer (1992) concluded that individual differences such as age, gender, prior computer experience, computer anxiety and cognitive style are associated with the level of computer skills.

METHODOLOGY

The sample consisted of 217 final year business administration undergraduates who were enrolled in a management course at Universiti Utara Malaysia. The research was operationalised by a survey using a questionnaire adapted from Teo and Lim (1996a). 384 questionnaires were distributed and only 217 were returned and completed. This gave a response rate of 57%. The questionnaires measured (1) socio-demographic attributes of respondents, (2) experience on using ICT, (3) the importance of ICT usage training and (4) attitudes (acceptance) related questions such as perceived usefulness of ICT, ease of use of ICT, the ability of ICT to enhance one's image or status (image), voluntariness to use ICT, enjoyment of surfing ICT (enjoyment), the suitability of ICT with learning requirements (job fit), tendency to enhance skill and knowledge on ICT. Student attitude towards ICT was measured using statements based on 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree. A pilot test was carried out on 10% of the intended sample which resulted in the Cronbach Alpha estimates (see Table 1).

ANALYSIS

The analysis began by determining the socio-demographic profiles of the respondent. It is found that of the 217 respondents, 41% are males (n=90)) and 51% are females (n=127). Malays constitute 77.4% of the respondents (n=168), Chinese 17.1% (n=37) and 5.8% are made up of Indians and Caucasians (n=12).

Table 1
Results of Cronbach Alpha Estimates

Variables	*No. of statements*	*Alpha Value*
Perceived usefulness of ICT	4	0.6636
Perceived ease of use of ICT	5	0.7933
Job fit	7	0.8342
Trialability	4	0.6477
Image	4	0.7542
Complexity	4	0.6031
Voluntariness of using ICT	4	0.6795
Enjoyment of using ICT	4	0.8842
Tendency to enhance skill and knowledge on ICT	4	0.7820
Total	35	0.8723

was conducted. The results showed that males appear to have longer prior experience with ICT compared with female respondents (mean score 2.53; p=0.022). This is consistent with previous research which generally found that males have greater experience of computers compared with females (Chen, 1986a). One possible reason is that computer usage has often been perceived to be a male-oriented activity and males have also been found to have greater liking to computers compared to females (Teo & Lim, 1996a). Furthermore, males are likely to perceive that learning about computer usage is interesting (Qureshi & Hoppel, 1995). It is interesting to note that ICT is mostly used for communication (through e-mail) and for academic purposes (n=92 and n=112) by the respondents.

Despite the high percentage of respondents exposed to ICT, only 13.3% (n=29) have the opportunity to attend training on ICT usage. Others seem to use ICT (i.e. surfing the Internet) without prior training. A closer look at the importance of attending training on ICT usage revealed that respondents perceived training on ICT usage helped a lot to enhance skills and competency to use ICT.

T-test conducted to examine differences on the contribution of ICT usage training showed that at the 95% confidence level, there were no differences found between genders (p=0.444). As shown in table 2 below, students tend to have a positive to highly positive attitude towards the usefulness of ICT, ease of use, job fit, trialability, image, enjoyment

and tendency to enhance skill and knowledge on ICT (mean scores above 3.0 at 1-5 point of Likert scale). With the mean score of 2.6022 on complexity of ICT and mean score of 2.8249 on voluntariness mean that respondents tend to disagree with the statement that 'ICT is complex to use' and 'they will only use ICT if required by their lecturers'.

Table 2
Computed Means on the Attitude Towards ICT

	Mean Score	Std. Deviation
Usefulness on ICT	3.9551	.5621
Ease of use of ICT	4.0430	.7058
Job fit	3.9132	.5579
Trialability of ICT	3.7500	.5585
Image	3.5641	.9259
Complexity of ICT	2.6022	.6871
Voluntariness of using ICT	2.8249	.7115
Enjoyment of using ICT	3.6198	.7550
Tendency to enhance skill and knowledge on ICT	4.1413	.6157

It is interesting to note that t-test results conducted revealed that male and female respondents have different attitudes towards ICT particularly on the way they perceived the usefulness of ICT, job fit, trialability of ICT, enjoyment and tendency to enhance skill and knowledge of ICT.

By comparing mean scores between genders, it was found that females tend to have more positive acceptance of the usefulness of ICT, suitability of ICT with learning requirement (job fit), the degree of trialability of ICT, enjoyment of using ICT and their tendency to enhance skill and knowledge on ICT. The mean scores of these are shown in Table 4.

Table 3

T-Test Results on Attitude Towards ICT Between Genders

Variables	*Levenes's Test for Equality of Variances*	*Sig. (2 tailed)*
Usefulness on ICT	Equal Variances Not assumed	0.000*
Ease of use of ICT	Equal Variances Assumed	0.418
Trialability of ICT	Equal Variances Assumed	0.004*
Image	Equal Variances Assumed	0.372
Job fit	Equal Variances Not Assumed	0.023*
Complexity of ICT	Equal Variances Assumed	0.783
Voluntariness of using ICT	Equal Variances Assumed	0.894
Enjoyment	Equal Variances Assumed	0.000*
Tendency to enhance skill and knowledge on ICT	Equal Variances Not Assumed	0.013*

*p<0.05

Table 4

Statistics on Perceived Usefulness, Job Fit, Trialability, Enjoyment and Tendency to Enhance Skill and Knowledge of ICT Between Genders

Attitudes	*Mean Scores*	*Standard Deviation*
Usefulness	Male=3.7143	0.6763
	Female=4.0536	0.5765
Job fit	Male=3.7528	0.7171
	Female=3.9788	0.4648
Trialability	Male=3.5798	0.6566
	Female=3.8198	0.4984
Enjoyment	Male=3.2976	0.7605
	Female=3.7516	0.7143
Tendency to enhance skill and knowledge on ICT	Male=3.9524	0.7617
	Female=4.2186	0.5286

T-test was conducted to find if any significant differences existed on the acceptance of ICT between respondents who have their own personal computers and with those who do not have revealed that a significant difference exists in terms of the way they accepted ICT in terms of (ease

of use) with p= 0.020. Those who have their own personal computers tend to accept ICT as easier to use (mean score=4.553) compared with respondents who do not have their own personal computers (mean score=3.1322). However, there is no significant difference on acceptance of ICT between respondents who have personal computers with ICT facility i.e. Internet facility and those who do not have.

DISCUSSION

From the data analysis undertaken, the following conclusion could be made (while considering the fact that the values generated were pretty small):

a. ICT is widely used among students particularly to communicate (through e-mail) and for academic purposes. This is consistent with the findings by Debrecency & Ellis (1998) that demand by students to access to computing and network resources are increasing.

b. Males were found to have longer ICT usage experience compared with females. This is consistent with previous research which generally found that males have greater total experiences to computers compared with females (Chen, 1986). They were likely to perceive that learning about computers is interesting compared with females (Teo & Lim, 1996b).

c. ICT is mostly used by students to communicate and access the current information mainly for academic purposes. However, this finding contradicted with the findings by Jefferies and Hussain (1998) that showed students tend to use ICT for entertainment and not for academic purposes.

d. Overall, students have a positive to highly positive attitude towards ICT. They tend to accept ICT as useful, easy to use, easy to try, enjoyful to surf, suitable their learning requirements. ICT is not complex, and competency to use ICT enables one to enhance one's image.

e. In terms of enthusiasm, it was found that whenever the opportunity arises, students would voluntarily use ICT in their assignments and other academic job.

f. The statistical analysis undertaken revealed that males and females perceived ICT differently. Females appear to have more positive attitudes towards the usefulness of ICT, the suitability of

ICT with their learning requirements and the ability of ICT to enhance their image/status if they are competent in using it. Compared with males, females were also found to perceive ICT easier to use than males. Finally, females were also discovered to have higher tendency to improve their skill and knowledge on ICT compared with males. These gender differences on job fit and image appear to be consistent with Teo & Lim (1996b) who studied gender issues on computer usage.

g. Between respondents who have personal computers and with those who do not have, there appear significant differences on the way they accept ICT as easy to use. Students who have their personal computers tend to have more positive attitude towards the ease of ICT compared with those who do not have their own personal computer.

h. Overall, students were found to have some experience and exposure to ICT without having to go through a training. For a minimum number of respondents who have the opportunity to attend training on ICT, they tend to perceive that training undertaken were useful and they benefit a lot from it.

RECOMMENDATIONS

Based on the findings, this study would like to suggest several recommendations. Perhaps these would be appropriate to institutes of higher learning in particular and ICT service providers in general:

a. For the administrators of higher learning institutions, we would like to recommend that a look at the opportunity to offer more training on ICT usage to students is necessary since prior training on ICT usage was found to be beneficial to students.

b. Individual differences such as gender and personal computer ownership were found to have an effect on the attitudes towards ICT. Thus, it is suggested that the implementation on training offers or ICT activities should take into consideration the differences and be sensitive to the students need and support.

c. ICT, like the Internet, is widely surfed by students in their learning activities. It is recommended that higher education institutions should add and improve more ICT facilities to students on campus, so that students who cannot afford to have their own personal computers will have equal opportunities to use the ICT for their academic purposes.

d. For ICT service providers such as cyber-cafés, lower charges or special discounts is recommended in order to encourage users to use ICT and this, eventually will help the nation to create an information rich society.

SUGGESTION FOR FUTURE RESEARCH

This study is limited in scope because of limiting factors such as limited time and small number of students involved. However, it is a good start to explore the direction for the creation of an information rich society in Malaysia. A more detailed study can be done involving more students from other universities and perhaps be undertaken over a longer period of time. In addition, more detailed studies have to be carried out to ascertain the total benefits of ICT and the effectiveness of ICT to the students' academic achievement. Such research can investigate students' development such as achievement, behaviors, communication skills and English proficiency that might be gained through the usage of ICT in their learning process.

CONCLUSION

The positive acceptance among students of ICT found in this study reinforces the need for institutes of higher leaning in particular and ICT service provider in general to consider providing more and better ICT facilities to its clients i.e., the students. Since training is perceived to be beneficial, the opportunities and diversity of training on ICT usage must be given a priority. To conclude, adequate provision of ICT facilities and training combined with students' positive acceptance to ICT may help an institution achieve its goal to produce information rich and computer literate students who would one day lead the nation towards a better educated and knowledgeable society.

REFERENCES

Applebee, A.C., Clayton, P. and Pascoe, C. (1997). Australian academic use of the ICT. *ICT research*, 7, p. 85-94.

Bridges, D. (1997). Philosophy and educational research; A reconsideration of epistemological boundaries. *Cambridge journal of education*, 27(2), pp.177-189.

Chen, M. (1986). Gender and computers: The beneficial effects of experience on attitudes. *Journal of educational computing research*, 2(3), p. 265-282.

Davis, F.D., Bagozzi, R.P and Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical Models. *Management science*, 35, p. 982-1003.

Debrecency, R. and Ellis, A. (1998). Managing student access to university information networks: The Australian experience. *Campus-wide information systems*, 15(2).

Elson, R. (1994). Welcome to cyberspace. *New librarian*, Nov, pp. 20-23.

Furlong, J., Furlong, R., Facer, K., & Rosamund, S. (2000). The national grid for learning: A curriculum without walls. Cambridge Journal of education, 30(1), pp.91-110.

Gould, S.B. (1990). An intellectual utility for science and technology: The national research and education network. *Government Information Quarterly*, 7(4), p. 415-425.

Harrison, A.W. & Rainer, R.K. Jr. (1992). The influence of individual differences on skills in end-user computing. *Journal of Management Information Systems*, 9(1), p. 93-111.

Jefferies, P and Hussain, F. (1998). Using the ICT as a teaching resource. *Education + training*, 40(8).

Joia, L.A. (1997). ICT implementation in Brazilian K-12 schools. *ICT Research*, 7(4).

Moore, G.C. & Bensatat, I. (1993). *An empirical examination of a model of the factors affecting utilisation of information technology by end-users*. Unpublished working paper.

Newton-Smith, C. & White, S. (1995). *Academics and librarians in partnership for quality teaching and learning*. Paper presented at Information Online and Disc 95: The Virtual Information Experience Proceedings of the 7th Australian Information Online Exhibition.

News Straits Times. (1999, July 17). Telekom invest more on ISP.

O'Brien, L. (1994). AARNet and libraries. *Australian Library Review*, 11(1), pp. 37-52.

O'Donoghue, M. & Dickey, W. (1994). Electronic mail in academic libraries: Is worth the investment?. *New Library World*, 95(1112), pp.4-8.

Qureshi, S. & Hoppel, C. (1995). Profiling computer predispositions. *Journal of Professional Services Marketing*, 12(1), p. 73-83.

Stix, G. (1994). The speed of write. *Scientific American*, pp. 72-77.

Teo, S.H. & Lim V.K.G. (1996a). Gender differences in occupational stress and coping strategies among IT personnel. *Women in Management Review*, 11(1), pp. 20-28.

Teo, S.H. and Lim, V. K.G. (1996B). Factors influencing personal computer usage: The gender gap. *Women in Management Review*, 11, pp. 18-26.

Thompson, R.L., Higgins, C.A., Howell, J.M. (1994). Influence of experience on personal computer utilisation: Testing a conceptual model. *Journal of Management Information Systems*, 11(1), 167-187.