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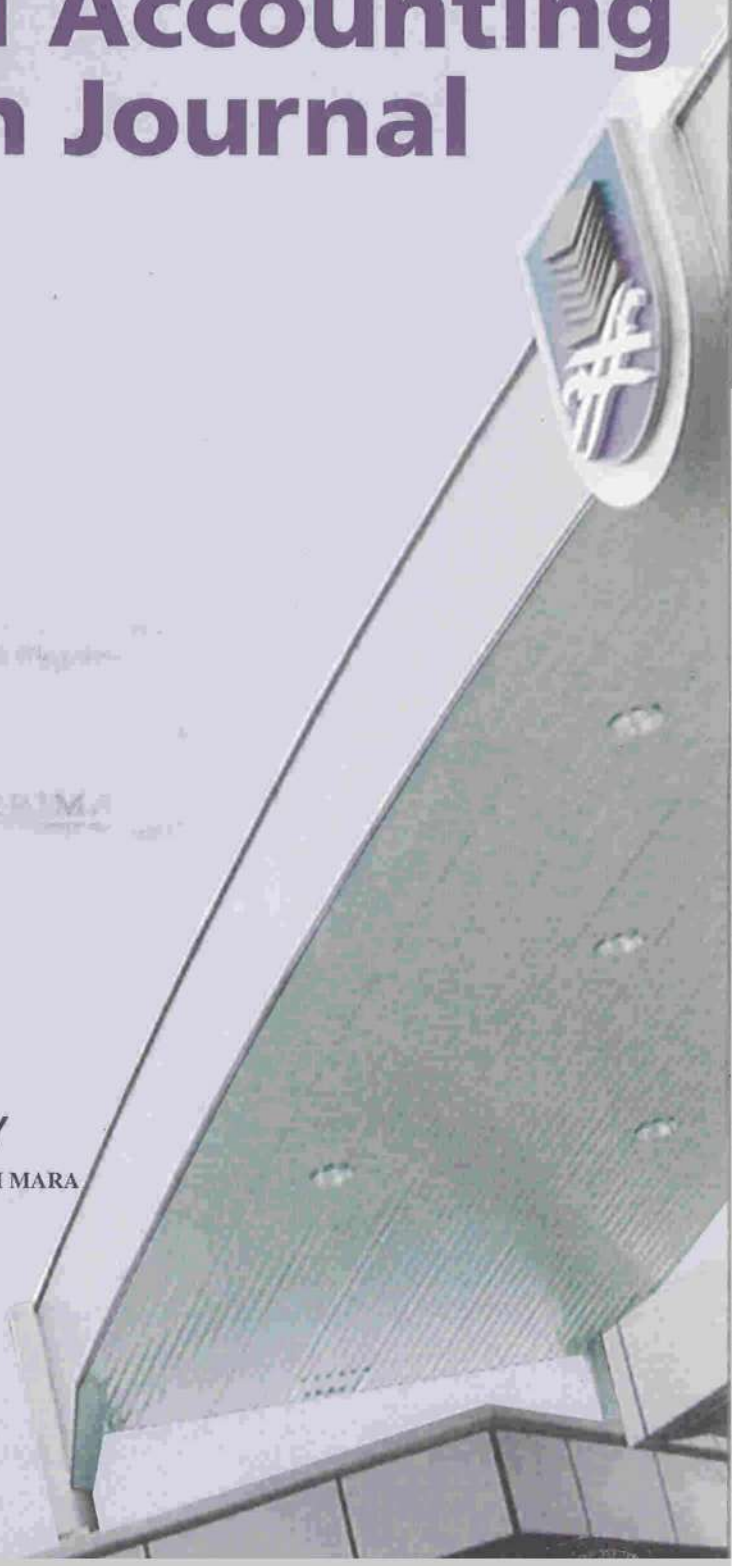

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Contents

An Empirical Study On Computer Literacy Among Graduating Students In The Bachelor Of Accountancy Programs Of Malaysian Public Higher Institutions

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Abstract

Information age in the 21st century is witnessing the dramatic increase in computer-related jobs. Many employers are now recruiting candidates who have knowledge and experience in information technology or those who are computer literate. Therefore, potential candidates should master at least some level of computer literacy. Thus, the main objective of this study is to analyse the level of computer literacy among graduating Bachelor of Accountancy students in Malaysian public higher institutions. Based on the findings, computer literacy can be group into basic, advanced, self-efficacy and technical level. Evidence shows that, graduating accountancy students are computer literate at the basic, advanced and self-efficacy level. Significant difference is also found in the students' perceptions on Accounting Information System (AIS) suggesting that the educators should give due attention to AIS courses, particularly in enhancing students' computer literacy level. There are also evidence that the level of basic and advanced computer literacy of male students are significantly higher than female students; those who owned computers are significantly more computer literate in terms of basic and advanced computer literacy than those who did not own computers; and finally, previous computer experience is not generally related to computer literacy achievement, except for self-efficacy computer literacy level.

1.0 Introduction

Information technology is rapidly changing at an alarming pace (German, 2000). Its dynamic changes are penetrating the business world, government bodies and agencies and other organisations. More and more of these organisations are using information technology to enhance activities, to provide efficient and better services and for businesses especially, to have a competitive edge. It is obvious that in the 21st century, almost all jobs will involve computers in some way (Yildirim, 2000). In fact, we are witnessing the dramatic increase in computer-related jobs. The remarkable developments in computer technology have influenced expectations from educational institutions (Yildirim, 2000). As stated by Fleming and Raptis (2000), new technology has significantly changed the world of educational thought and practice.

Employers are now eyeing candidates who have knowledge and experience in information technology or those who are computer literate (Imel, 1989). Therefore, students must develop computer literacy (Kryder, 1999) and master at least some level of computer literacy (Smith and Necessary, 1996). Information technology has also showed its impact on our daily life. It has permeated most aspects of our lives (Zeszotarski, 2000) and is continuing to have a significant impact on our lives (Low, 1999). For example, information technology has made possible on-line shopping, payment of bills and provision of services through the Internet, electronic mailing, video conferencing, electronic designing or state-of-art and creating and sending resumes on-line (Kryder, 1999). Therefore, the society that embraces information technology is now moving towards becoming a global society where there will be easy access to global market, global capital market and global businesses. Those that do not will be deprived of this global access.

However, in order to implement information technology either for business or personal use, one has to know how to use it. Otherwise the whole purpose is useless, because the cost of investment in information technology can be very substantial, and the technology is fast changing. Members of many professional fields have recognised that persons entering the workplace require additional computer training (Wells and Rogers, 1999). According to Rani, Vani and Devi (1996), accountants with no knowledge of computers are considered to be out of date. Those who are not knowledgeable of computer applications will find themselves at an ever-increasing disadvantage (Klein, Cerullo and Cerullo, 1991). Thus, it is essential for accountants of today to master computer technology (Rani, Vani and Devi, 1996). It is expected that the educational institutions prepare the next generation of citizens for the technological oriented global world (Yildirim, 2000). Yet many academics are not supportive of their efforts to incorporate these changes in their teachings (Kryder, 1999). Thus, it is important for students to become computer literate since most, if not all, jobs require the use of information technology.

2.0 Statement of Problem and Objective

Employers are now looking for candidates who have knowledge, and experience in information technology or those who are able to handle the technology. Therefore, graduating students must arm themselves with a degree of computer literacy in order to be successful in getting jobs. They should also be able to apply the skills to their jobs where necessary. Thus, the main objective of this study is to analyse the level of computer literacy among graduating students in the Bachelor of Accountancy program of public institutions of higher learning in Malaysian. Specifically the objectives of this study are as follows:

1. To determine the level of computer literacy among graduating accountancy students;
2. To examine students' perceptions on Accounting Information System (AIS) courses offered by the faculties in the respective institutions;
3. To determine whether there is a significant difference between male and female students level of computer literacy in the respective institutions; and
4. To analyse whether there is a significant difference in the level of computer literacy between students who own and those who do not own computers,
5. To examine whether there is a significant difference in the level of computer literacy between students who have and those who do not have prior computer experience.

3.0 Significance of the Study

The results of this study will benefit the public institutions of higher learning in Malaysia by providing some indication to educators as to whether their graduating accountancy students are computer literate or otherwise, as well as the extent of the level of computer literacy. This will enable them to decide whether to provide more computer facilities and to plan whether to integrate more information technology into the syllabus in enhancing computer literacy among students. This study is necessary as it provides useful indications as to whether the graduating students meet the needs of the current market and the increasing demands of a computer literate society.

According to Kryder (1999), if the institution does not equip the students with knowledge in information technology, school leavers will tend to further their education at other institutions, which will better prepare them for business communication in the workplace. Since this study also examines students' perceptions on AIS courses, it will give an insight to the educators about the students' perceptions on AIS and will also enable them to determine whether the AIS courses are important in improving the students' computer literacy or whether they should be revised.

4.0 Literature Review

Issues with respect to computers and education have been addressed in academic literature on a regular basis since the 1960s (Klein, Cerullo and Cerullo, 1992). There are many of them with diverse areas such as: computer literacy and its definition (Kay, 1993; Smith and Necessary, 1996; Randolph and Arthur, 1997; Sreenivasulu, 1998; Zeszotarski, 2000; German, 2000); attitude (Francis, 1991; Francis, 1993; Kay, 1992; Yildirim, 2000); gender (Kay, 1992; Harrison, Rainer et al., 1997); computer usage (Klein, Cerullo and Cerullo, 1991; Kay, 1992; Randolph and Arthur, 1997; Yildirim, 2000; Dusick and Yildirim, 2000); self-efficacy in computer skills (Qutami and Abu-Jaber, 1997; Karsten and Roth, 1998); computer integration and curriculum (Klein, Cerullo and Cerullo, 1991 and 1992; Togo, 1995; Wells and Rogers, 1999; Halpin, 1999); and the Internet (Golian, 2000). However, this paper focuses only on issues related to students' computer literacy and their perceptions on accounting information system.

4.1 Definition of Computer Literacy

There are many definitions of computer literacy and most definitions are either too narrow or too broad (Kay, 1993). Its definition is changing dramatically (Losee, 1994) and the development of its definition has resulted in countless debate (Woodrow, 1991). Kay's operational definition of computer literacy is based on Computer Ability Survey (CAS) and consists of four subscales: software ability, computer awareness, programming skills, and perceived control over the computer. Menosky (1984) defined computer literacy as the ability to name parts of a computer and their functions, ability to work on a few of the more popular programs and to write some elementary programs. Woodrow's (1991) definition of computer literacy is more on the understanding of computer characteristics, capabilities and applications; it includes the ability to implement this knowledge to skilfully and, productively apply the application to suit individual roles in society.

Computer literacy is a popular term, but vague in usage (Kanter, 1995). However, in the late 1990s, most often computer literacy generally referred to a familiarity with the use of personal computers (PCs) including the employment of word processing, spreadsheets, databases, and other popular software tools (Kanter, 1995). Sreenivasulu (1998) also defined computer literacy as the level of expertise and familiarity with computers and generally refers to the ability to use applications rather than to program. Halpin (1999)[1], from the academic perspective, defined computer literacy as the teacher's ability to apply theory-related concepts into their classroom instructions. Zeszotarski (2000) argued that the definitions of computer literacy vary depending on the type of degree programs or courses,

[1]*Compared preservice teachers confidence to transfer computer applications into their classroom instruction depending on whether they were taught computer literacy from a theory perspective focussing on skills alone or from a theory and application perspective where their computer skills were learned simultaneously.*

while according to German (2000), computer literate people are those who are able to plunge into new technology and at the same time feel confident that they will eventually master it.

4.2 Computer Literacy

Computer literacy is of paramount important. Zhang and Espinoza (1998) have identified important factors that assist students in acquiring computer technology. These are attitudes toward computers, computer self-efficacy, and commitment to learning computing skills. Several studies also show that students' exposures to information technology can also help them acquire computer literacy. For example, Karsten and Roth (1998) found multiple types of computer exposures to be significantly related to students' computer literacy. Students exposed to electronic documents, hypertext Web documents, and presentation software can see the advantages and disadvantages in their uses as well as develop skills in visual literacy and collaborative writing, and increase their communication skills (Kryder, 1999).

In relation to computer experience, studies on computer literacy among students revealed that experience with computers led to higher computer literacy (Smith and Necessary, 1996). Smith and Necessary (1996)[2] found that students with more years of computer experience scored significantly higher on the CAS[3] than those students with lesser years of computer experience. Similar statistically significant differences were found with students who owned their own computer, students' perceived knowledge of computers, and with students who were more than 23 years of age. The above is consistent with the findings of Karsten and Roth (1998)[4] that there is a significant correlation between computer experience and Computer Self-Efficacy (CSE). In spite of this significant correlation, they found that computer experience was not a significant predictor of performance. Marcal and Roberts (2000)[5] also found that computer literacy prerequisite had no effect on the students' performance in business communications. Their results indicated that students who fulfilled the requirement earn grades similar to those students who did not.

Woodrow (1991)[6] found that prior programming experience and prior computer literacy were correlated with computer literacy achievement, but the correlations

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[2]*Assessed self-perceived computer literacy based on specific demographic variables on 316 undergraduate students enrolled in business courses at a large Midwestern university using Computer Ability Survey (CAS).*
[3]*Developed by Kay (1993).*
[4]*Studied the relationship of computer experience and CSE to performance in introductory computer literacy courses, performed on 98 undergraduate students at a university in the Midwestern United States*
[5]*Carried a study on California State University at Northridge on students who enrolled for the business communication course during the fall 1997. The sample size was 150 students.*
[6]*Studied the determinants of student teacher computer literacy achievement on 98 student teachers enrolled in an introductory computer literacy course.*

were minimal. She also found that age and prior word-processing experience were generally not related to computer literacy achievement.

4.3 Curriculum

A number of researches have also been carried out on students' computer literacy in order to give insight to educators on the level of students' computer literacy. Research in this area enables the educators to plan for or revise a course related to information technology. According to German (2000) a good computer curriculum should identify age-appropriate skills, both in the software it uses and in the exercises it presents. Determining the level of students' computer literacy is also necessary because many employers concurred that persons entering the workplace require additional computer training (Wells and Rogers, 1999). In addition, according to Patrikas and Newton (1999), knowledge of the computer literacy level of the students provided targeted, non-redundant course content and curriculum design which is cost effective and more satisfying.

Kryder (1999) also encouraged the integration of computer literacy within courses in order to inspire students to use information technology and increase their communication skills. Although Jones and Berry (2000) found that students do not rely heavily on their classes information technology, nevertheless they suggested that the course content should be evaluated to include discussions of emerging technology. Randolph and Arthur (1997) also agreed that universities must do more than simply make computers available to their students. They suggested that when developing a program there should be an effort to eliminate the real level of differences in computer skills that students bring to the university and that the program must have the primary objective of encouraging all students to appreciate computer literacy as an indispensable tool of long-term self-instruction and empowerment in the 21st century.

4.4 Gender

It is interesting to note that researches on gender differences in behaviour toward computers have increased (Kay, 1992). Many researches on gender focussed on differences in a variety of age group, attitude towards computer, computer aptitude (sometimes also referred to as computer literacy), and actual computer usage (Kay, 1992). One research indicated that, in general, computer skills were male-oriented (Qutami and Abu-Jaber, 1997). Harrison et al, (1997)[7] provided evidence that, in general, males might be more proficient than females in computing activities.

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[7]*Looked at the differences between males and females in computer related activities using job model and gender model of work as the theoretical framework, on personnel of a large university from clerical, technical, faculty and administrative categories. They found that based on gender model and job model by faculty category, males have significantly more computer experience, significantly less fear, and possessed significantly higher self-efficacy than females, except using job model by clerical category, where females have significantly more years of computer experience and have significantly less fear.*

Woodrow (1991) also agreed that gender was related to gains in computer literacy. However, her study revealed that gender was generally not related to computer literacy achievement. Smith and Necessary (1996) found that male students had more positive attitude toward computers than female students. Male students scored higher on the CAS instrument than did females. On the other hand, Francis (1993)[8] found that there was no significant difference between men and women on their attitudes towards the computer.

Qutami and Abu-Jaber (1997) also found that there was no gender effect on the overall self-efficacy score. They found no significant difference between males and females on advanced skills. However, they discovered some significant differences in favour of males in some specific low-level computer skills: such as starting skills, general framework skill, files skills and total skills The results implied that when both males and females were presented with computer training and experiences, the benefits were approximately the same. Thus, they suggested that when designing training and experiences on computer skills, the needs and interests of female students should also be considered accordingly. Otherwise this might lead to thesupposition that females are unfairly disadvantaged in the workplace (Smith and Necessary, 1996).

4.5 Familiarity and Use

Randolph and Arthur (1997)[9] examined differences in use of and familiarity with computing technology between black and white undergraduate college students. They found that generally computer usage among the students was high. However, bivariate relationship revealed that the frequency of computer usage differs. White students used the computers more frequently than the black students. Mathews (2000)[10] found that gender, years of experience, number of computer, and computer ability had significant direct effects on computer usage and that males had more years of experience, reported greater computer ability, and possessed more computers in classrooms. Smith and Necessary (1996) found that there was a significant difference between the CAS score and the computer usage per week.

4.6 Malaysian Scenario

According to the Deputy Education Minister Datuk Dr Fong Chan Onn, computer literacy is still low in Malaysia.We had only achieved about 3 percent computer literacy compared with 15 per cent in Hong Kong and 22 per cent in Singapore

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[8]*Developed new attitude measurement where he surveyed 378 first year undergraduate students within one college of Higher Education in Wales in 1991.*
[9]*Performed exploratory study on 570 students, drawn from a large northeastern private university during academic year 1994-1995.*
[10]*Used path analysis model on 1600 teachers in 55 South-eastern Idaho school districts.*

(Anonymous, 1999). Rani, Vani and Dewi (1996), studied the integration of information technology into the accounting curriculum of five institutes of higher learning (IHL).[11] They found that all five IHLs have already integrated information technology courses into the accounting curriculum. Besides, they also found that the five IHLs offer compulsory introductory courses in the first year and other related information technology courses in the final year. However, their exploratory study did not examine the success factor in the implementation of such courses. Majid and Mansor (1996)[12] investigated the usage of CD-ROM at the University of Malaya's and the International Islamic University Malaysia's academic libraries. Users felt it was difficult and not convenient to use. One of the reasons put forward is the low level of computer literacy among the users.

5.0 Research Methodology

This study used questionnaires, which were distributed from August to September 2001 to graduating students in the Bachelor of Accountancy program of public institutions of higher learning in Malaysia. The universities selected were Universiti Teknologi MARA (UiTM); Universiti Islam Antarabangsa (UIA); Universiti Kebangsaan Malaysia (UKM); Universiti Malaya (UM); Universiti Putra Malaysia (UPM); Universiti Teknologi Malaysia (UTM); and Universiti Utara Malaysia (UUM). The questionnaire consists of three parts. Part One contains demographic items. Part Two assesses the computer skills (CS) of the respondents. It comprises items that are related to assessing computer skills to enable the level of computer literacy to be measured. Students are required to indicate their level of confidence on a 5-point Likert scale. The scale ranged from "1=Not Confident At All" to "5=Extremely Confident". These items are adapted from a study carried out by Karsten and Roth (1998), who employed the computer self-efficacy (CSE) scale to measure computer literacy. Karsten and Roth (1998) have defined CSE as the judgment of one's ability to use the computer. The original CSE scale did not include items relating to the ability to use the Internet. This is included in the current study, as it has become a new platform for a new information and communication revolution.

Finally, Part Three of the questionnaire consists of eleven items that are aimed at examining students' perceptions on Accounting Information System (AIS) courses. Respondents are required to denote their perceptions on a 5-point Likert scale ranging from "1= Strongly Disagree" to "5=Strongly Agree". This section also consists of open-ended questions, which require the respondents to give comments on AIS courses offered.

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[11] *The five institutions of higher learning are Universiti Malaya, International Islamic University, Universiti Kebangsaan Malaysia, The Agricultural University of Malaysia, now known as Universiti Putra Malaysia, and MARA Institute of Technology now known as Universiti Teknologi MARA.*

[12] *A sample of 100 graduate students and 50 faculty members from each university were randomly selected to complete a survey instrument*

6.0 Research Hypotheses

Computer literacy is important in today's environment and is considered a top educational goal (German, 2000). Based on these, the first objective of this study is to determine the level of the computer literacy among graduating students in the Bachelor of Accountancy program of public institutions of higher learning in Malaysia. Thus, H1: There is no significant difference among graduating students in the Bachelor of Accountancy program of public institutions of higher learning in Malaysia in the level of computer literacy

There has been no specific research done to examine students' perceptions on AIS courses. This is necessary in order to provide some evidence on students' perceptions regarding the courses to the respective faculties. Hence, H2: There is no significant difference among graduating students in the Bachelor of Accountancy program of public institutions of higher learning in Malaysia in the perception on the AIS courses.

Woodrow (1991) found that in general gender was not related to computer literacy achievement. Qutami and Abu-Jaber (1997) also found that there was no gender effect on the overall self-efficacy score. However, they discovered some significant differences in favour of males in some specific low-level computer skills: starting skills, general framework skill, files skills and total skills. Harrison et al. (1997) agreed that males, in general, were more proficient than females in computing activities. Smith and Necessary (1996) found that male students scored higher on the Computer Ability Survey instrument than did females. Thus, the third objective is to find out whether there is a significant difference between male and female students' computer literacy levels. Therefore, H3: There is no significant difference between male and female students' computer literacy level.

It is presumed that owning a computer and having experience can have a great impact on one's computer literacy level and ability to surf on the Internet. Objectives four and five are related to finding out whether there are differences in the level of computer literacy between students having own or not having own computers, and between the students having or not having computer experience before entering the universities, respectively. Therefore, H4: There is no significant difference in the level of computer literacy between students that own computers and those that do not own computers; and H5: There is no significant difference in computer literacy level between students that have and that do not have prior computer experience.

7.0 Measurement Procedures

There has been little agreement as to what constitute computer literacy. Its definition varies depending on the type of degree program or course with reference to which they are being used (Zeszotarski, 2000). Since there is no consensus on the

definition of computer literacy, this study defines computer literacy as possessing basic computer skills (CS), i.e. the ability to use a computer and the ability to use the Internet. This measurement of computer literacy is arguable. But it can be accepted since, according to Karsten and Roth (1998), it is difficult to capture timely the objective measure of computer literacy since information technology is fast changing.

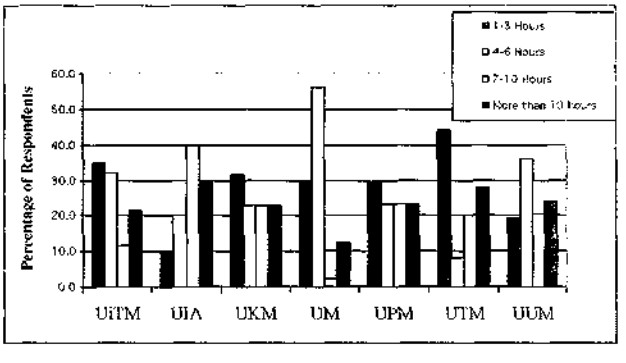
The definition of the computer literacy in this study includes the ability to use the Internet because the technology has permeated most aspects of our lives (Zeszotarski, 2000). In this study, the operational definition of computer literacy, computer skills (CS) contains 25 items, which are adapted from Karsten and Roth (1998). While, students' perceptions on AIS courses are measured using 11 items.

8.0 Data Analysis And Findings

The data obtained were analysed based on non-missing cases. This means, cases are included if the variables needed for the analysis are present. Otherwise they are excluded. As shown in Table 1, Appendix 1, there are 378 respondents from UiTM; 20 from UIA; 22 from UKM; 41 from UM; 30 from UPM; 25 from UTM and 108 from UUM. Table 2, Appendix 2 shows the percentages of the respondents by gender, prior computer experience and ownership of computers. Overall, there are more female than male respondents for most universities except UIA and UTM. More students own computers and have prior computer experience than those who do not own computers and those who do not have prior computer experience.

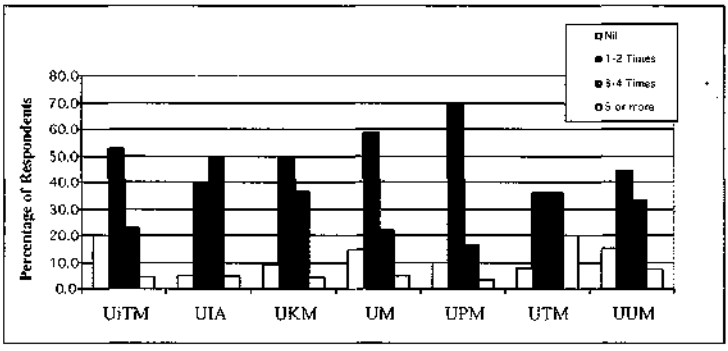
Table 3, Appendix 1 shows the respondents' age by university. The majority of the UKM, UPM, UTM and UUM respondents' ages are in the range of 19-22 years old, while UiTM, UIA and UM respondents are in the age range of 23-26 years. With regards to the weekly usage of computers, Table 4, Appendix 1 shows that most UiTM, UKM, UPM and UTM respondents used computers between 1 to 3 hours per week; while most UM and UUM respondents used between 4 to 6 hours per week; and most UIA respondents used between 7-10 hours per week. This is

Chart 1: Weekly Use (in hour)



also shown in Chart 1 below.
In addition, as can be seen in Table 5, Appendix 1, most respondents (more than 50%) have taken between 1 to 2 computer courses before joining the Bachelor program at their respective universities, except UIA respondents, where 50% respondents have taken between 3 to 4 computer courses prior to joining the

Chart 2: No. of Computer Courses Taken



Bachelor program. This is depicted in Chart 2 below.

Table 6, Appendix 1 shows that the respondents used computers most often at home, and Table 7, Appendix 1 reveals that the respondents learn computer technology most from friends (72.9%), followed by learning through formal courses (32.3%). This is consistent with Jones and Berry's (2000) findings, where they found that neither American nor Taiwanese students relied heavily on their classes for their learning of information technology. Table 8, Appendix 1 analyses between gender and those owning and not owning computers; and between gender and those who have and those who do not have prior computer experience. The table shows that 72.1% of the male respondents owned computers, 27.9% did not own computers and 77.2% of the total male respondents had computer experience and 22.8% did not have computer experience. As for the females, 75.5% owned computers and 24.5% did not own computers and 83.0% had computer experience and 17.0% did not have computer experience. The results show that there is a positive relationship between those who owned computers and those who had prior computer experience. However the relationship is not analysed statistically.

8.1 The Level of Computer Literacy among Students

Factor analysis used on 25 computer literacy items in the questionnaire classifies them into 4 groups namely: Advanced (Factor 1); Basic (Factor 2); Self-efficacy (Factor 3); and Technical (Factor 4). Table 9, Appendix 2 shows the ANOVA on Computer Literacy. The results show that there are significant differences in basic, advanced and self-efficacy (Factor 1, 2 and 3) computer literacy level among graduating accountancy students. On the other hand, there is no significant difference

in technical aspect (Factor 4) computer literacy level. Factors 1, 2 and 3 were further analysed using LSD Post Hoc test and ANOVA descriptive statistic to identify which university's students' computer literacy was significantly higher or lower than the others. The results of the analysis are shown in Table 10, Appendix 1.

8.2 Analysis on Factor 1 - Advanced Computer Literacy

Table 10 shows that at 5% significant level, UTM students' advanced computer literacy (Factor 1) is significantly higher than all other university students, except UIA. This finding is not surprising, since it is found that 20% of the UTM students attended 5 or more computer courses before joining their Bachelor degree or while doing the degree, while the percentages for the other universities' students are less than 8%. In addition, 95.8% and 92% of UTM students have prior computer experience and have their own computers respectively, whereas the percentages for other universities students are lower.

8.3 Analysis on Factor 2 - Basic Computer Literacy

The results indicate that the basic computer literacy level of UIA students is significantly higher than the students of UiTM, UUM, UPM and UTM, but there is no significant difference with UM and UKM students. It is observed that UIA students' basic computer literacy ranked at the top, followed by UUM, UTM, UiTM and UPM students. This could be explained by the fact that 40% and 30% of the UIA students spent between 7-10 hours weekly and more than 10 hours per week, respectively, on the computers, whereas, less than 25% of the other universities' students spent more than 7 hours per week. This might suggests that those who spent more than 7 hours per week on computers are more likely be computer literate in the basic knowledge than those who spent less time.

8.4 Analysis on Factor 3 - Self-efficacy

Table 10 also reveals that UTM students' self-efficacy computer literacy is significantly higher than other universities' students, including UiTM. On the other hand, UiTM students' self- efficacy level of computer literacy is significantly higher than students in UM, UKM, and UUM, but is not significantly different from UPM students.

8.5 Students' Perceptions on Accounting Information System Course

The Factor Analysis used classifies the items that measure the students' perceptions into three groups. These are the perceptions on the AIS courses (Factor 1); perceptions on the lecturers (Factor 2); and perception on AIS contents (Factor 3). Reliability tests show that the alpha scores for factor 1 is 0.8928, factor 2 is 0.8265 and lastly, factor 3 is 0.3214. Since, the alpha coefficient for factor 3 is

small, the validity of the items in factor 3 is questionable and thus is ignored for further analysis. The results of the ANOVA, as shown in Table 11, Appendix 1, show that there are significant differences in the perceptions on AIS courses and perceptions on the AIS lecturers, among the graduating accountancy students.

Table 12, Appendix 1 on Multiple Comparisons LSD on perceptions on AIS reveals that UKM students' perception on AIS course is significantly higher than all other university students' perceptions, except UUM. This indicates that relative to other universities' students, UKM students perceived AIS course as important as it enhances their computer literacy. But their perceptions on the AIS lecturers are not significantly different from all other university students' perceptions. On the other hand, the UTM students' perceptions on AIS lecturers are significantly higher than UiTM, UM and UUM students' perceptions.

8.6 Comparison between Male and Female Students' Computer Literacy Level

Table 13, Appendix 1 shows the results of the Two Independent Samples T-Test on the male and female students' computer literacy level. It shows that there are significant differences between males and females advanced (Factor 1) and basic (Factor 2) computer literacy, which are in favour of males. Thus, it can be inferred that the level of basic and advanced computer literacy of male students are higher than female students. This finding is consistent with the finding of Harrison et al. (1997) and Smith and Necessary (1996). On the other hand, there are no significant differences between males and females as regards to their self-efficacy (Factor 3) and technical aspect (Factor 4) computer literacy. This finding seems consistent with Woodrow's (1991), where her study revealed that gender is not generally related to computer literacy achievement and Qutami et al. (1997) who found that there is no gender effect on the overall self- efficacy score.

8.7 Comparison between Students Owning and Not Owning Computers in Terms of Their Computer Literacy Level

Table 14, Appendix 1 shows the results of the Two Independent Samples T-Test on students owning and not owning computers on their computer literacy level. There are significant differences in the advanced (Factor 1) and basic (Factor 2) computer literacy between such students. This finding is consistent with Smith and Necessary (1996) who found that those who owned computers are more computer literate than those who did not own computers.

8.8 Comparison between Students' Computer Literacy Level of Those Who Have and Do Not Have Prior Computer Experience

Table 15, Appendix 1 reveals the results of the Two Independent Samples T-Test

on respondents' computer literacy level of those who have and do not have prior computer experience. There is a significant difference in self-efficacy (Factor 3) computer literacy in students' computer literacy level between the two groups (Table 13 of the appendix). This finding is consistent with Smith and Necessary (1996), who found that experience with computers leads to higher computer literacy; and Karsten and Roth (1998) who found that computer experience is significantly correlated to computer literacy. However, there are no significant differences for advanced (Factor1), basic (Factor 2) and technical aspect (Factor 4) computer literacy between students who have and do not have prior computer experience. Woodrow (1991) found that previous word-processing experience was generally not related to computer literacy achievement.

9.0 Conclusion And Recommendations

Computer literacy can be grouped into four namely: basic; advanced; self-efficacy; and technical. The overall results show that there are significant differences in basic, advanced, and self-efficacy but not in the technical aspect of computer literacy among graduating accountancy students in Malaysian public higher institutions. UIA students' basic computer literacy is higher compared to UiTM, UUM, UPM and UTM students but no different from UM and UKM students. One of the reasons may be because 70% of their students spent at least 7 hours per week on computers, whereas less than 25% of the other universities' students spent at least 7 hours per week on computers. This suggests that those who spent more than 7 hours per week on computers are more likely be computer literate in basic knowledge than those who spent less. The advance and self-efficacy computer literacy of UTM students are significantly higher than the students in other universities. This could be because 20% of UTM students attended 5 or more computer courses before joining their Bachelor degree or while doing the degree. In addition, 95.8% and 92% of UTM students have prior computer experience and personally own computer, respectively, whereas the percentages for other universities' students are lower. This can be concluded that attending at least 5 computer courses, having prior computer experience, as well as owning computers enhance students' advanced and self-efficacy computer literacy.

With regard to the perceptions on AIS, UIA students' perceptions are significantly lower than the students from UKM and UUM, meaning that UIA students perceive AIS courses as either not important or make no difference in helping them to improve their computer skills. However, the perceptions of UIA students on the AIS lecturers are significantly higher than UM and UUM students. This means that these students consider lecturers are important in improving their computer literacy skills. On the other hand, UKM students perceive the AIS course as important in improving their computer skills but did not consider the AIS lecturers important in enhancing their computer literacy level.

Based on gender, the results indicate that the levels of basic and advanced computer literacy of male students are higher than female students. This means that general computer skills are still considered as masculine things. This is supported by Harrison et al. (1997) and Smith and Necessary (1996). On the other hand, there are no significant differences between male and female as regards to their self-efficacy and technical aspect computer literacy. This may suggest that both male and female university students are not exposed fully to computers for self-efficacy and to be technically computer literate. It can be argued that they are not majoring in computer science but in accounting instead. Hence it is expected that they lack in self-efficacy and technical computer literacy. The results are consistent with Woodrow's (1991), who found that gender is not generally related to computer literacy achievement and Qutami et al. (1997) who found that there is no gender effect on the overall self- efficacy score.

With regard to owning and not owning the computers, the significant differences in the advanced and basic computer literacy suggest that those who own computers have advantages. Their access to computers are unlimited, the time they spent on computers will be at their convenience, and may spent long hours on the computer as compared to those who did not own computers. As such this enhances their basic and advanced computer skills. This finding is consistent with Smith and Necessary (1996) who found that those who own computers are more computer literate than those who do not own the computers. However, since, there were no significant differences in terms of self-efficacy and technical aspect computer literacy among these students, it can be concluded that by just owning computers does not mean that they are completely independent, self-efficient and are able to handle the technicalities associated with the computers. In addition, significant difference found between students who have and those who do not have prior computer experience in terms of their self-efficacy computer literacy, suggests that computer experience enable students to be self-efficient. These perhaps have to be acquired over time. This is similar to the findings Smith and Necessary (1996) and Karsten and Roth (1998) who found that experience with computers lead to higher computer literacy. No significant differences in advance, basic and technical computer literacy between those who have and those who do not have prior computer experience suggest that computer experience is not important in order acquire advance, basic and technical computer literacy. Woodrow (1991) found that previous word-processing experience was generally not related to computer literacy achievement.

10.0 Implications of the Findings and Recommendations

The results of the study indicate that to a certain extent the graduating students in the Bachelor of Accountancy program of public institution of higher learning in Malaysia are computer literate. However, there is a need to assess whether this level of computer literacy is adequate or whether an attempt should be made to

strengthen their computer literacy level. The significant finding on students' perception on the AIS courses suggests that due attention should be given to these courses. The open-ended questions reveal that some students feel they need more practical exposure to, rather than classroom theories on AIS. They also commented that it is difficult to memorise the technical aspects of the AIS courses. These should be considered and integrated into the curriculum so that it could the enhance students' technical computer literacy.

Future planning to integrate computer studies into the accounting curriculum should also consider the gender differences of the students. The findings suggest that the students should be encouraged to possess their own computers or should be given unlimited access to the computers in the universities. Students who spent more than 7 hours a week on computers enhance their basic computer literacy. Students' previous computer experiences also have some impact on their self-efficacy computer literacy. Those who had attended more than five computer courses improved not only their advanced but also their self-efficacy computer literacy.

11.0 Recommendations for Future Research

Computer technology is going to have a major impact in our country. Our government has taken several steps in order to improve the nation's computer literacy. Thus more research should be carried out to assess computer literacy level, even among government and private sector employees. Future research should also be carried out among students from social sciences background to assess the factors that might contribute to their higher computer literacy level so that various steps can be taken to enhance computer literacy level among students and in preparing them for the new information age.

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APPENDIX 1

Table 1: Total Number of Respondents by University

University	Total Respondents	
	No.	%
UiTM	378	60.6
UIA	20	3.2
UKM	22	3.5
UM	41	6.6
UPM	30	4.8
UTM	25	4.0
UUM	108	17.3

Table 2: Percentages of Respondents by Gender, Prior Computer Experience and Own Computer

University	Gender				Computer Experience				Own Computer			
	male (n)	female (n)	male (%)	female (%)	Yes (n)	No (n)	Yes (%)	No (%)	Yes (n)	No (n)	Yes (%)	No (%)
UiTM	114	245	31.8	68.2	311	67	82.3	17.7	279	98	74.0	26.0
UIA	14	6	70.0	30.0	15	5	75.0	25.0	16	4	80.0	20.0
UKM	10	12	45.5	54.5	18	4	81.8	18.2	14	7	66.7	33.3
UM	17	23	42.5	57.5	37	4	90.2	9.8	32	9	78.0	22.0
UPM	4	25	13.8	86.2	23	7	76.7	23.3	22	8	73.3	26.7
UTM	6	3	66.7	33.3	23	1	95.8	4.2	23	2	92.0	8.0
UUM	15	91	14.2	85.8	82	26	75.9	24.1	80	28	74.1	25.9

Table 3: Respondents Age by University

Age	UiTM		UIA		UKM		UM		UPM		UTM		UUM	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
19-22 years	38	10.1	1	5.0	14	63.6	10	24.4	23	76.7	18	72.0	57	52.8
23-26 years	329	87.3	19	95.0	7	31.8	31	75.6	7	23.3	6	24.0	51	47.2
27-30 years	7	1.9				1	4.5				1	4.0		
More than 30 years	3	0.8												
Total	377	100.0	20	100.0	22	100.0	41	100.0	30	100.0	25	100.0	108	100.0

Table 4: Weekly Use (Hour)

Hour	UiTM		UIA		UKM		UM		UPM		UTM		UUM		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1-3	130	34.7	2	10	7	31.8	12	29.3	9 3	0.0	11	44.0	21 1	9.4	192	30.9
4-6	121	32.3	4	20	5	22.7	23	56.1	7	23.3	2	8.0	39	36.1	201	32.4
7-10	44	11.7	8	40	5	22.7	1	2.4	7	23.3	5	20.0	22	20.4	92	14.8
33 More than 10	80	21.3	6	30	5	22.7	5	12.2	7	23.3	7	28.0	26	24.1	136	21.9
Total	375	100.0	20	100	22	100.0	41	100.0	30	100.0	25	100.0	108	100.0	621	100.0

Table 5: Computer Course

No. of Times	UiTM		UIA		UKM		UM		UPM		UTM		UUM	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Nil	75	20.1	1	5	2	9.1	6	14.6	3	10.0	2	8	16	15.1
1-2 Times	197	52.7	8	40	11	50.0	24	58.5	21	70.0	9	36	47	44.3
3-4 Times	86	23.0	10	50	8	36.4	9	22.0	5	16.7	9	36	35	33.0
5 or more	16	4.3	1	5	1	4.5	2	4.9	1	3.3	5	20	8	7.5
Total	374	100.0	20	100.0	22	100.0	41	100.0	30	100.0	25	100.0	106	100.0

Table 6: Place Often Use

Place	UiTM		UIA		UKM		UM		UPM		UTM		UUM	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
At laboratory	16	4.4	5	26.32	2	10.0	5	13.2	1	4.0	2	8	20	20.2
Library	5	1.4					1	2.6			1	4	10	10.1
Home	292	80.4	10	52.63	14	70.0	29	76.3	16	64.0	21	84	48	48.5
Cyber cafe	39	10.7			3	15.0	3	7.9	8	32.0	1	4	4	4.0
Others	11	3.0	4	21.05	1	5.0							17	17.2
Total	363	100.0	19	100.0	20	100	38	100	25	100.0	25	100	99	100.0

Table 7: Sources of Learning

Sources of Learning	Count	% of Responses	% of Cases
Friend	452	51.8	72.9
Magazine	86	9.9	13.9
Formal Courses	200	22.9	32.3
Help	54	6.2	8.7
Others	81	9.3	13.1
Total Responses	873	100.0	140.8

Table 8: Relationships between Gender and Own Computer; and Gender and Prior Computer Experience

	Own Computer			Prior Computer Experience		
Gender	Yes	No	Total	Yes	No	Total
Male	72.10%	27.90%	100%	77.20%	22.80%	100%
Female	75.50%	24.50%	100%	83.00%	17.00%	100%

Table 9: ANOVA on Computer Literacy

Computer Literacy (Factor)	Significant Level
Advanced (Factor 1)	0.000
Basic (Factor 2)	0.003
Self-Efficacy (Factor 3)	0.000
Technical Aspect (Factor 4)	0.357

Table 10: Multiple Comparisons: LSD on Computer Literacy

Dependent Variable	(I) University	(J) University	Mean Difference (I-J)	Sig.
Factor 1	UiTM	UM	-.1865741	296
		UKM	-5.0547571E-02	.814
		UUM	-.1438805	.208
		UPM	-.2916660	.144
		UIA	-.6360380 *	.007
		UTM	-1.1596558 *	.000
	UM	UiTM	.1865741	.296
		UKM	.1360265	.613
		UUM	4.269357E-02	.829
		UPM	-.1050919	.681
		UIA	-.4494639	.117
		UTM	-.9730817 *	.001
	UKM	UiTM	5.054757E-02	.814
		UM	-.1360265	.613
		UUM	-9.3332963E-02	.686
		UPM	-.2411184	.394
		UIA	-.5854904	.060
		UTM	-1.1091082 *	.000
	UUM	UiTM	.1438805	.208
		UM	-4.2693574E-02	.829
		UKM	9.333296E-02	.686
		UPM	-.1477855	.494
		UIA	-.4921574	.050
		UTM	-1.0157752 *	.000
	UPM	UiTM	.2916660	.144
		UM	.1050919	.681
		UKM	.2411184	.394
		UUM	.1477855	.494
		UIA	-.3443720	.250
		UTM	-.8679898 *	.003
	UIA	UiTM	.6360380 *	.007
		UM	.4494639	.117
		UKM	.5854904	.060
		UUM	.4921574	.050
		UPM	.3443720	.250
		UTM	-.5236178	.103
	UTM	UiTM	1.1596558 *	.000
		UM	.9730817 *	.001
		UKM	1.1091082 *	.000
		UUM	1.0157752 *	.000
		UPM	.8679898 *	.003
		UIA	.5236178	.103

Factor 2	UiTM	UM	-.2496334	.167
		UKM	-.3738256	.086
		UUM	-.2474299 *	.033
		UPM	.2256214	.263
		UIA	-.8067787 *	.001
		UTM	-7.5895517E-02	.745
	UM	UiTM	.2496334	.167
		UKM	-.1241922	.648
		UUM	2.203463E-03	.991
		UPM	.4752548	.067
		UIA	-.5571454	.055
		UTM	.1737379	.541
	UKM	UiTM	.3738256	.086
		UM	.1241922	.648
		UUM	.1263956	.589
		UPM	.5994470 *	.037
		UIA	-.4329532	.168
		UTM	.2979300	.336
	UUM	UiTM	.2474299 *	.033
		UM	-2.2034627E-03	.991
		UKM	-.1263956	.589
		UPM	.4730513 *	.031
		UIA	-.5593488 *	.028
		UTM	.1715344	.490
	UPM	UiTM	-.2256214	.263
		UM	-.4752548	.067
		UKM	-.5994470 *	.037
		UUM	-.4730513 *	.031
		UIA	-1.0324002 *	.001
		UTM	-.3015169	.312
	UIA	UiTM	.8067787 *	.001
		UM	.5571454	.055
		UKM	.4329532	.168
		UUM	.5593488 *	.028
		UPM	1.0324002 *	.001
		UTM	.7308832 *	.025
	UTM	UiTM	7.589552E-02	.745
		UM	-.1737379	.541
		UKM	-.2979300	.336
		UUM	-.1715344	.490
		UPM	.3015169	.312
		UIA	-.7308832 *	.025

Factor 3	UiTM	UM	.3634044 *	.042
		UKM	.4298896 *	.046
		UUM	.2862415 *	.012
		UPM	.2060963	.300
		UIA	-6.6717853E-02	.778
		UTM	-.9522000 *	.000
	UM	UiTM	-.3634044 *	.042
		UKM	6.648522E-02	.804
		UUM	-7.7162867E-02	.695
		UPM	-.1573081	.538
		UIA	-.4301223	.133
		UTM	-1.3156044 *	.000
	UKM	UiTM	-.4298896 *	.046
		UM	-6.6485223E-02	.804
		UUM	-.1436481	.534
		UPM	-.2237933	.428
		UIA	-.4966075	.109
		UTM	-1.3820896 *	.000
	UUM	UiTM	-.2862415 *	.012
		UM	7.716287E-02	.695
		UKM	.1436481	.534
		UPM	-8.0145196E-02	.710
		UIA	-.3529594	.159
		UTM	-1.2384416 *	.000
	UPM	UiTM	-.2060963	.300
		UM	.1573081	.538
		UKM	.2237933	.428
		UUM	8.014520E-02	.710
		UIA	-.2728142	.362
		UTM	-1.1582964 *	.000
	UIA	UiTM	6.671785E-02	.778
		UM	.4301223	.133
		UKM	.4966075	.109
		UUM	.3529594	.159
		UPM	.2728142	.362
		UTM	-.8854822 *	.006
	UTM	UiTM	.9522000 *	.000
		UM	1.3156044 *	.000
		UKM	1.3820896	* .000
		UUM	1.2384416 *	.000
		UPM	1.1582964 *	.000
		UIA	.8854822 *	.006

Factor 4	UiTM	UM	-2.1779595E-02	.905
		UKM	-.1204246	.585
		UUM	-4.1481828E-02	.723
		UPM	.3797876	.063
		UIA	-.2357843	.331
		UTM	.2723760	.249
	UM	UiTM	2.177959E-02	.905
		UKM	-9.8644984E-02	.720
		UUM	-1.9702233E-02	.922
		UPM	.4015672	.126
		UIA	-.2140047	.465
		UTM	.2941556	.307
	UKM	UiTM	.1204246	.585
		UM	9.864498E-02	.720
		UUM	7.894275E-02	.739
		UPM	.5002122	.085
		UIA	-.1153597	.717
		UTM	.3928006	.210
	UUM	UiTM	4.148183E-02	.723
		UM	1.970223E-02	.922
		UKM	-7.8942752E-02	.739
		UPM	.4212694	.057
		UIA	-.1943025	.450
		UTM	.3138578	.212
	UPM	UiTM	-.3797876	.063
		UM	-.4015672	.126
		UKM	-.5002122	.085
		UUM	-.4212694	.057
		UIA	-.6155719 *	.045
		UTM	-.1074116	.722
	UIA	UiTM	.2357843	.331
		UM	.2140047	.465
		UKM	.1153597	.717
		UUM	.1943025	.450
		UPM	.6155719 *	.045
		UTM	.5081603	.123
	UTM	UiTM	-.2723760	.249
		UM	-.2941556	.307
		UKM	-.3928006	.210
		UUM	-.3138578	.212
		UPM	.1074116	.722
		UIA	-.5081603	.123