

Full Length Research Paper

Attitudes toward learning accounting by computers: The impact on perceived skills

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Accountancy has been significantly affected by information technology. Accounting education curricula, however, still largely ignore the use of computers as tools in the learning process, mainly because of budgetary and timetable constraints. This study investigates the impact of learning accounting by computers on students' perceived skills. The aim of our study was to determine the effectiveness of teaching undergraduate accounting students courses in using computer in accounting. Four hundred and sixty-three accounting students were included in the study, a multiple choice question survey was performed after finishing a course offered to teach students computer skills in accounting. The results showed that such course has an impact on attitudes towards the perceived skills from using computers for accounting purposes. After the course, no gender differences with respect to attitudes towards the perceived skills were found, but males report shows slightly more computer experience than females.

Key words: Information technology, using computer in accounting, learning skills, gender.

INTRODUCTION

The proliferation of personal computers throughout business environments will continue to place demands on workers at all levels to develop proficient computer skills. In accounting, the accounting profession recognizes that individuals entering the profession must have sufficient knowledge of computer skills to be successful because of its pervasiveness in business activities (Elliott, 1997). Using computer in accounting is an integral means for helping students to provide needed skills and it is vitally important that accounting students have the proper experience and a positive attitude towards computers because of the relationship between attitudes towards computers and motivation and performance (Mcdowall and Jackling, 2006; Mills, 1997; Igabaria et al., 1990; Eason and Damodaran, 1981, Shneiderman, 1979). Because of the importance placed on computer skills by the profession, it is important to determine the impact of teaching computer skills that accounting have on accounting students in terms of the perceived skills.

Many studies investigated the relationship between students' perceptions toward computer skills in accounting and students attitudes and some other variables such as gender or prior experience in using computer. Gender differences have been reported in literature as affecting perceptions in general (Hackett et al., 1991). Consequently, gender was included as a matter of understanding if differences of perceptions toward using technology occurred between male and female respondents. Experience with the computer skills was included because research has documented the relationship between experience and user acceptance of technology in general (Koohang, 1989). The more experience a user has with technology the more he or she tends to accept it. Therefore, user's acceptance may in turn promote learning.

Because of these critical professional and educational issues, this study provides an investigation on the impact of studying a course in using computers for accounting purposes on attitudes towards the skills perceived in general and further to know to what extent this impact is affected by prior experience and gender. Accounting students are surveyed in this course at the end of a se-

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mester with respect to their experience and attitudes towards computers for determining the impact of the course on those surveyed. Survey responses at the end of the semester are further analyzed to determine whether differences exist by gender after attending the course.

Literature review

For over twenty years, accounting researchers have been studying the cognitive effects of a variety of techniques for integrating computers into the accounting curriculum; however, the results are frequently contradictory. After a comprehensive review of the studies concerning computer used in accounting instruction, Ng and Er (1989) opined that based on existing evidence "computing is irrelevant to the learning of accounting concepts". Earlier than this, Baxter (1974) and Arnett (1976) examined differences in examination scores between experimental groups, which used template programs, and control groups, which did not use computers. In both studies, no differences were found in examination scores between control and experimental groups, leading them to conclude that the use of computers did not enhance accounting proficiency.

Research outside the accounting discipline is also inconsistent and thus largely inconclusive. Kulik and Kulik, (1986) in a meta analysis of 101 studies across disciplines found a significant overall positive learning effect attributed to computer use. On the other hand, Norris (1987) reported that studies in various disciplines at six universities had failed to establish a correlation between learning and computer use. An extensive study at Dartmouth conducted in 24 introductory courses found no difference in grades between computer owners and non-owners in 21 of the 24 courses (Norris, 1987).

In the 1980s as computers became common, the American Accounting Association (AAA) recognized the growing pressure on accounting educators to integrate computer technology into accounting education. In an early report, the AAA (1985) identified these pressures as emanating from three primary sources. Firstly, the AACSB reviews computer use in accounting courses as part of its accreditation evaluation of accounting programs. Secondly, the widespread use of computers in accounting practice has pressured accounting departments to produce computer literate graduates to enhance their employability. Thirdly, computer use in secondary education has increased the expectations and desires of students to use computers in college (AAA, 1985).

While recognizing the value of computers to accounting practice, the AAA was concerned about the efficacy of using computer technology to educate accounting students. Contradictory results from earlier studies such as Baxter, (1974) and Arnett, (1976), which indicated that using a computer in a course did not necessarily improve student performance, and studies which did find learning

effects (Groomer, 1981; Friedman, 1981) prompted these concerns. As a result of concerns by its membership, the AAA formed the committee on integrating the micro-computer into undergraduate financial accounting to promote the study of ways to effectively integrate computer technology into accounting curriculum (AAA, 1985).

Concurrent as the microcomputer use is becoming widespread, accounting researchers were already exploring a variety of ways to use computers in accounting education. This research, similar to the research a decade earlier, primarily explored the cognitive effects of different techniques for incorporating computers in accounting courses and attempted to measure the effects by measuring the student's perceptions.

Borthick and Clark (1986), while studying cognitive effects broadened the search for the effects of computers on students beyond the cognitive and into the affective domain with an investigation of attitudinal effects. While they did not detect performance differences, they found that student enthusiasm for using computers declined. Similarly, Dickens and Harper (1986) examined the effects of computer use on student achievement and attitudes in an intermediate accounting course. They required students to use an interactive computer program to solve either an inter-period tax allocation problem or an earning per share problem. Examination performance of students who used computer and those who did not was the same. However, contrary to Borthick and Clark's (1986) results, they reported that students reacted positively to using computers.

Austin (1989) examined the performance and behavioral effects of using computers and spreadsheets in the introductory financial accounting course. He found no performance differences on examinations of either problems or essay questions between the control and experimental groups; however, he detected a decline in enthusiasm for using computers.

Kachelmeier et al. (1992), using a spreadsheet based template for pension accounting, observed a performance difference on examinations between the students who used the spreadsheet program and those who did not. They noted that the students in the study had been extensively exposed to computers in other classes so discounted the novelty effect of sparking interest in the subject matter which might be manifested in heightened interest in the subject matter. Despite finding cognitive effects, they cited the lack of a measurement of the attitudinal effects as a limitation of their study.

The impact of studying a course in using computers in accounting on students' skills and link with gender was also important to study. Many studies, in general, report that males tend to have more experience and more favorable attitudes towards computers than females. Daigle and Morris (1999), however, found results for accounting students contrary to most findings for students in general. Based on a survey given to students in four courses across an accounting curriculum at the beginning of a

semester, Daigle and Morris, (1999) failed to find an attitude or experience difference towards computers based on gender amongst students later in an accounting curriculum after finding some minor differences amongst students early in an accounting curriculum. Daigle and Morris (1999) also failed to find a difference in attitudes or experience based on gender of students who had been selected to emphasize their studies in studying computer in accounting course.

Daigle and Morris (1999) results indicate that gender differences for experience and attitudes towards computers may not exist because of a self-selection bias when choosing a major and in choosing an area of emphasis within accounting. However, if gender differences in experience and attitudes towards computers do in fact exist /with regard to accounting students, accounting programs and the profession should seek to ensure that gender differences not exist amongst those choosing careers in accounting because of the relationship between attitudes towards computers, motivation and performance. Therefore, further research is definitely needed to determine if using computer in accounting courses change the attitudes and experience towards computers by gender. The importance of this research is magnified since more than 40% of today's accounting students are female and because of the increasing importance of computer competencies within the accounting profession. This study provides the first formal look at the impact of computer skills in accounting course on the experience and attitudes towards computers of accounting students in general and further by gender in the Jordanian universities.

Wet and Niekerk (2001) concluded that computer assisted learning packages were suitable means of communicating many instructor materials to students. Also Mcdowall and Jackling (2006) examined students' perceptions at the usefulness of computer assisted learning packages in learning accounting concepts in terms of the influence on academic performance. They concluded that gender, prior studies at accounting and computing systems were not significant on academic influence on academic performance.

Mohd et al. (2007) investigated that students with different backgrounds and attitudes towards computers influence their levels of computer skills. All Form Five (GCE 'O' Level equivalent) students from three different types of schools in the rural district of Segamat, Malaysia were sampled. The t-test and ANOVA results show that there were significantly different influences of the types of schools they enrolled in, their computer ownership, computer club memberships and their computer skills. The findings also revealed significant correlation between the same computer attitude subscales and the students' computer skills.

Research questions

This study measures the impact of studying a course in

using computers for accounting purposes and attitudes towards the computer skills perceived by accounting students. The authors hypothesized that exposure to computers might similarly produce behavioral effects and influence perceptions. This supposition leads to the following exploratory research questions:

- 1) What are the students' attitudes toward using computers?
- 2) Are student's attitudes toward using computers differing by gender?
- 3) Is there a value added in student's computer skills after studying an introductory course in accounting which offers some computer skills?
- 4) Do accounting students have previous experience in using computer?
- 5) What are the factors affecting the students' perceived skills in using computers for accounting purposes?

METHODOLOGY

In study, students were enrolled in an introductory course in accounting which offers some computer skills. Such course offered in many Jordanian universities. The aim of this course is to make accounting students able to use computers as tools to record and analyze financial transactions and to have some needed skills such as using spread sheets and excel functions in accounting. Also in some universities such course covers the skills of building a database for accounting purposes. The outcomes based nature at this course could contribute to the preparation of students at workplace. Since the beginning of 2000 a decision result were taken by high education ministry in Jordan that all students at Jordanian universities have to take at least two primary computer courses as part at the first year course (computer skills 1 and 2). More courses in computer skills are offered in many Jordanian Universities. For accounting majors all accounting students are required to study a course on introductory accounting which offers some computer skills, the course might be offered in different names but the content is almost same.

This study uses a survey design, using a combination of a modified version of the Adapted Bath County Computer Attitude Scale of some attitude and experience questions (Qureshi and Hoppel, 1995). Another experience questions were included from a study by Lowe and Krahn, (1989). The First Section of the survey instrument asks for demographic data regarding gender, class status, major, concentration area of current interest in accounting and GPA. The Second Section of the instrument was designed to evaluate the students' responses toward attitude questions of using computers in general. Section three was added to collect information about students experience in using computers. Finally section four is also included to collect information regarding students' responses toward the perceived skills after study-

Table 1. Mean response rate for all students to attitude questions toward using computers.

| Question | Mean response |
|--|---------------|
| Working problems on a computer is fun. | 4.00 |
| It is easy to get tired of using a computer. | 3.10 |
| Studying computers in university would be a good idea. | 4.40 |
| People who use computers in their occupations are the only people who need to study about computers. | 1.20 |
| Learning about computers is interesting. | 3.90 |
| University would be a better place without computers. | 1.30 |
| I enjoy using a computer. | 4.52 |
| Computers are boring. | 1.20 |
| Working on a computer is a good way to spend spare time. | 4.20 |
| Using a computer becomes boring after about 30 minutes. | 2.00 |
| Learning about computers is something I can do without. | 1.55 |
| Computers are not exciting. | 1.80 |
| Studying about computers is a waste of time. | 1.51 |
| It is fun to figure out how computers work. | 4.21 |
| Computers help people think. | 3.54 |
| Classroom discussions about the uses of computers in society are a waste of time. | 2.09 |
| Learning about the different uses of computers is interesting. | 3.45 |

Table 2. Mean response rate by gender for attitude questions found significant

| Question | Mean Response For Females | Mean Response for Males |
|---|---------------------------|-------------------------|
| It is easy to get tired of using a computer. | 3.12 | 3.06 |
| Learning about computers is something I can do without. | 2.85 | 3.05 |

ing a course in using computers for accounting purposes. The subjects of this study are students who enrolled in a course covers computer skills in accounting at five Jordanian universities.

RESULTS FROM TESTING RESEARCH QUESTIONS

Students enrolled in the course of the study completed the survey at the last week of the semester, the semester is sixteen week time, and the survey was completed in week fifteen. Only surveys from students who completed a survey are used in the analysis. This results in a useable sample of 463 surveys. Males completed 270 and females 193. The gender make up of the sample is consistent with the current trend that more males than females are studying accounting at Jordanian universities.

The first research question was about the students' attitudes toward using computers. Table 1 show that students' attitudes towards computers are very positive. To interpret the mean responses, the direction of the question and the mean response shown in Table 1 must be considered together. As examples, a question says computers are not exciting has a mean response of 1.80 indi-

cating that subjects tended to disagree with the statement, while a question says computers help people think has a mean response of 3.54 indicating that the subjects tended to agree with the statement. These mean responses show a favorable attitude towards computers.

The mean responses shown in Table 1 illustrate that the students surveyed generally have a positive attitude towards computers. Of the attitude questions all responses are either positive or neutral, with the majority being positive. The mean responses suggest that, in general, those surveyed have an overall positive attitude towards using computers.

Second research question deals with the effect of gender on the attitudes towards computers. The research questions are important because of the possibility that the course impacts experience and attitudes towards computers differently for males and females. But in this current study no significant interaction between genders is found for attitude questions at a level significance of 0.05. These results indicate a failure to find significant changes in the attitudes towards computers of those surveyed after taking the course, based on gender. But as shown in Table 2, only two questions point a significant difference by gender at the end of the semester. Therefore, only these two questions require further consideration for

Table 3. Mean response rate for all students to the value added of studying computer skills in accounting

| | |
|---|------|
| Reading and talking about how computers might be used in the future is boring. | 2.00 |
| Learning about the using of Excel in accounting is interesting. | 3.41 |
| Learning about using computers as tools to record and analyze financial transactions is interesting. | 2.89 |
| Learning about using accounting commercial programs is interesting. | 3.59 |
| I enjoy learning about how computers are used in accounting profession. | 4.12 |
| Studying about the uses and misuses of computers in accounting issues will help me to be a more responsible accountant. | 4.11 |
| I wish I had more time to use computers in doing accounting issues. | 4.25 |
| Taking a computer related course can have a positive impact on my attitude towards using computers in accounting. | 4.36 |
| It is fun to figure out how computers are used by accountants | 4.22 |
| I wish I had more courses about using computer in accounting | 3.98 |

Table 4. Mean response rate for all students to experience questions

| Question | Mean response |
|--|---------------|
| If you have access to a personal computer at home, how often do you use it? | 3.10 |
| If you do not have a personal computer, but had the ability to get one, would you acquire one? | 1.90 |
| How often do you use the college computer labs? | 2.90 |
| If you have access to a computer at work, how often do you use it? | 3.20 |
| Before entering college, did you ever take a course that met six times or more to learn about computers? | 1.90 |
| Approximately how many such courses did you take before entering college? | 0.20 |
| How many such courses have you taken in college? | 1.50 |
| Besides this course, are you enrolled this semester in a computer-related course? | 1.10 |
| Which of the following skills do you have with using a computer? (The scale yes:1 and No: 2) | mean |
| Playing games | 1.90 |
| Data entry | 2.00 |
| Word processing | 1.80 |
| Spreadsheets | 1.00 |
| Programming | 1.00 |
| Statistical analysis | 1.02 |
| Database management | 1.01 |

determining whether attitudes of those surveyed differ by gender.

None of the mean responses in Table 2 show an unfavorable attitude towards computers by gender. The mean responses for females and males for questions shown in Table 2 are essentially neutral. Therefore, based on the results from Tables 1 and 2, one can conclude that both males and females generally have an overall favorable attitude towards computers after taking a course in computer in accounting. As shown in Table 3 students attitudes toward the value added of studying computer skills in accounting is very strong, which means that this course is very beneficial to the accounting students. Consequently in regards to research question number 4 and as shown in Table 4, it might be concluded that positive

attitudes towards computers are related to experience with computers, the positive attitudes of the students in this survey can likely be explained by examining the student's experience with computers. Therefore, the mean responses to experience questions for all the students surveyed are provided in Table 4.

The mean responses to the experience questions generally show that students would use the computer many times if they have access to a personal computer at home or at work. The mean responses in Table 4 show that students have not taken many computer courses in college or before entering college. Specific mean responses in Table 4 of interest are those related to students skills in using computers playing games, data entry and word processing are general level of skills that all or most

Table 5. Bivariate correlations of the predictors with students' perceived skills in using computer for accounting purposes (predicted variable).

| Predictor | Correlation with the predicted variable |
|------------------------------------|---|
| Gender | -0.006 |
| Age | -0.055 |
| Grade-Point Average (GPA) | -0.063 |
| Attitudes toward using computers | 0.280* |
| Prior Experience in using computer | 0.223* |

*p < 0.001

Table 6. Results of stepwise regression analysis using five variables as predictors.

| | | Regression | | | | |
|-------|---------------------------------------|------------|----------|-----------------|----------|--------------|
| Steps | Variable | R | R square | R square change | F change | Sig. Fchange |
| 1 | Prior experience | 0.223 | 0.050 | 0.050 | 23.011 | 0.001 |
| 2 | Attitude towards using computers | 0.340 | 0.115 | 0.066 | 32.359 | 0.001 |
| | | ANOVA | | | | |
| Steps | Variable | | | Df | F | Sig. F |
| 1 | Prior experience | | | | | |
| | Regression | | | 1 | 23.011 | 0.001 |
| | Residual | | | 438 | | |
| | Total | | | 439 | | |
| 2 | Attitude toward using computer | | | | 28.509 | 0.001 |
| | Regression | | | 2 | | |
| | Residual | | | 437 | | |
| | Total | | | 439 | | |

of students have but skills with using spread sheets and statistical analysis are too low even such skills are very important to accountants in their work life.

Correlation analysis

In order to answer question 5, the results of the correlation analysis associated with the stepwise regression analysis are displayed in Table 5. The bivariate correlations of the possible predictors (gender, age, GPA, attitudes toward using computers and prior experience) with the predicted (dependent) variable, students' perceived skills in using computer for accounting purposes are listed in the second column. It is interesting to note that the correlations between each of gender, age, GPA and the predicted variable are negative, relatively small and statistically not significant. However, the other two predictors (attitudes toward using computers and prior experience) proved to be significant. In fact, the strongest correlation existed between the predicted variable and prior experience in using computer ($r = .223$).

Multiple regression analysis stepwise approach

Table 6 shows the results of the stepwise regression analysis using five variables as predictors. Step one of the analysis revealed that prior experience in using computers is a significant predictor of students' perceptions toward the value added of studying computer skills in accounting course, $r^2 = 0.05$, $F(1,438)=23.01$, $p<0.001$. This result is supported by the close moderate correlation between the two variables ($r=.223$). Approximately 5% (r^2) of the variance of the students' perceptions variable was accounted for by its linear relationship with students' prior experience in using computer.

Step two of the stepwise regression analysis indicated that the attitudes toward using computers variable did add significantly to the prediction of students' perceptions toward the value added of studying computer skills in accounting r^2 change= 0.066 , $F(1,437)=32.359$, $p<0.001$.

The same step also showed that the linear combination of the two variables (prior experience with the computer and attitudes toward using computers) was significantly related to the students' perceptions variable, $r^2 = .115$, F

(2,437) = 28.509, $p < .001$. This means that almost 11.5% of the variance of the students' perceptions variable was accounted for by its linear relationship with students' attitudes toward using computers and prior experience.

Conclusion

As Jordanian institutions of higher education enforced to teach computer skills in accounting for their accounting students, it is imperative to understand and predict students' perceptions toward the value added of studying such course. By being able to predict students' perceptions, instructors and decision makers can improve and enhance students' learning experience.

The purpose of this study was to determine the extent to which age, gender, grade point average (GPA), prior experience in using computers and attitudes toward using computers could predict students' perceptions toward the value added of studying computer skills in accounting.

The findings of the study determined that age, gender and GPA have no positive and significant relationship with the students' perceptions toward the value added of studying computer skills in accounting. Furthermore, the findings showed that students' prior experience in using computers and their attitudes toward using computer course may act as predictors of their perceptions toward the value added of the course. More precisely, the study showed that approximately 11.5% of the variance of students' perceptions was accounted for by its linear relationship with both students' prior experience and their attitudes toward using the computers.

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