Students' Major Choice in Accounting and its Effect on their Self-efficacy Towards Generic Skills: An Australian Study

Satoshi Sugahara
Kazumi Suzuki
Gregory Boland

Abstract

The objective of this study was to explore undergraduate students' self-efficacy on their generic skills in an attempt to identify whether a student's choice of a major in accounting develops these types of skills. For the purpose of this study, self-efficacy is defined as a student's belief in his/her ability to perform certain generic skills, namely interpersonal skills, information skills, analytical skills and behavioral skills that are required by the accounting profession. It is important that such beliefs are studied in order to shed light on how students feel and think of the accounting profession and how they could motivate themselves to perform at levels required by it. This is the first study on self-efficacy that has used undergraduate accounting students as the sample population in an attempt to illuminate the issue of students' self-efficacy on their generic skills as a new measure for learning outcomes. The data for the study were taken from undergraduate business students studying in an Australian university. In addition, the study also examined differences in the degree of self-efficacy that exist between accounting and non-accounting students. This is also the first study that provides empirical evidence of possible correlations between students' self-efficacy of generic skills and their choice of a major in accounting. The findings indicate that accounting programs in a tertiary institution have limited impacts on improving students' self-efficacy toward their generic skills. It is envisaged that tertiary educators, by reflecting and revising their current accounting curriculums, will assist future graduates develop the full range of generic skills necessary for them to compete in today's accounting environment.

Keywords: Generic skills, Self-efficacy, Accounting students, Accounting curriculum

Introduction

Over the past decades accounting associations world-wide have placed as high priority, a generic skill development awareness program for its members. The driver behind this campaign has been the International Federation of Accountants (IFAC, 1996; 2003). According to the IFAC, the world's changing economic environment demands a new type of accounting professional equipped with generic skills including communication, team playing, leadership, problem solving, analytical, and interpersonal skills. Generic skills have been defined as the transferable qualities required to suit the industry in which individuals work (De Lang *et al*., 2006). This awareness campaign has been addressed in accounting literature by alerting readers to the deficiencies in educational programs relating to generic skills. Research in countries such as the United States (AICPA, 1999; Albrecht and Sack, 2000), the United Kingdom (ICAEW, 1996; Gammie, 2002), New Zealand (NZSA, 1994; Hawkers *et al*., 2003) and China (Lin, *et al*. 2005) has focused on the perceived training gap that exists during the transition period between academic study and professional employment.

The IFAC's global campaign has also targeted tertiary accounting education in Australia. Accounting educators and professional bodies in this country have been challenged to develop innovative accounting programs that encourage the development of these generic skills (Mathews *et al*, 1990; Birkett, 1993; ICAA, 1998; 2001). The 2008 Professional Accreditation Guidelines for Higher Education developed by the ICAA and CPA Australia also require higher education institutes to provide accounting curriculums that incorporate generic skill development.

However, research to date has found that some of the requirements, as indicated in the guidelines, have not yet been achieved. For instance, Cable *et al*. (2007) ascertains that training gaps in accounting education still exist in the tran-

sition from academic study to professional employment. The study found gaps included graduates' lack of communication and professional skills. Performing similar research, Whitefield and Kloot (2006) studied the assessment of curriculum in an Australian university in an attempt to determine whether the accounting curriculum sufficiently addressed the generic skills advocated in the professional accreditation guidelines. Their findings indicated that some generic skills had not been covered at all while others received only token coverage. De Lang *et al*. (2006) also addressed graduates' perception on how much emphasis should be given to generic skill development during their undergraduate accounting degree. This study found that existing accounting programs failed in their attempt to provide graduates with generic skills and specialized professional education despite strong demand by the workforce. Overall, these prior studies have cast doubt on the effectiveness of present accounting programs to improve students' generic skills to the level required by the accounting profession.

This current study re-examines the effectiveness of current accounting programs in Australia to develop students' generic skills from a different perspective. The study attempts to shed light on students' self-efficacy of generic skills as a new measure for learning outcomes. No study in accounting literature has explored the self-efficacy of generic skills for students who major in accounting. Previous research has, however, occurred in other disciplines by investigating students' self-efficacy in order to assess the effectiveness of respective training and/or education programs (e.g. Kretovics, 1999; Boyatzis *et al*., 2002; Scott and Mallinckrodt, 2005; Tang *et al*., 2004).

This current paper attempts to contribute to a further understanding on generic skill development in accounting literature from the point of view of students' self-efficacy. The first objective is to explore self-efficacy towards generic skills by Australian undergraduate business students and to identify the effect that accounting programs have on developing their profile of skill self-efficacy. Sec-

ondly, this study also attempts to compare differences in the level of self-efficacy between accounting and non-accounting students. This analysis will help understand the unique profile of skills' self-efficacy attributed to accounting students compared to those of non-accounting students.

Following this introductory section the paper reviews prior literature to develop our research hypotheses. The third and fourth sections explain the research methodology and techniques of analysis respectively. The fifth section provides interpretation and results of our analysis. The final section consists of our conclusion, contributions and limitations of this research paper.

Literature Review and Hypotheses Development

Early works addressing generic skill issues in accounting literature attempted to assess the role of perceptions towards generic skills among business students. For example, a US study by Usoff and Feldmann (1998) examined the perceived importance of generic skills in relation to one's success in accounting practices relative to technical accounting skills for both undergraduate and postgraduate accounting students. From a questionnaire-based survey, the findings demonstrated that these students tended to be well aware of the importance of generic skills, particularly communication skills, in respect to education and experience. But the result placed the importance of technical accounting skills much higher. These results were consistent with several other previous studies in the US such as those by Gammie *et al*. (2002), Hutchinson and Fleischman (2003) and Mohamed and Lashine (2003). Although such previous works contributed to reveal how students perceived generic skills, it is still obscure as to how effectively tertiary accounting programs encourage students to foster and develop the important generic skills.

In contrast, recent studies in other disciplines have explored students' self-efficacy of generic skills as the proxy for their learning outcomes. Self-efficacy

is defined by Smith (2001) after reviewing pivotal previous works, as the situation-specific self-confidence in one's abilities to organize and execute a course of action to obtain certain outcomes. Technically, this terminology is thought of as the belief in one's ability to execute successfully a certain course of behaviour (Bandura, 1977; 1982). Although Bandura (1997) found that self-efficacy is not directly related to actual skill level, the study did acknowledge its relevance in determining how long an individual perseveres with a task and whether this task will be engaged in at all. Bouffard-Bouchard *et al*. (1991) and Tang *et al*. (2004) also discovered evidence in counseling studies to suggest that more self-efficacious students manage work time better, are more persistent and are more likely to achieve correct solutions.

Following these theories of self-efficacy, later research successfully displayed statistical evidence on correlations between students' choice of majors and their self-efficacy in terms of science majors (Scott and Mallinckrodt, 2005). Both results reported that students who appear to have engaged in such subjects tend to have higher self-efficacy. These studies give credence to Pajares (1997)'s finding that academic self-efficacy beliefs vary according to subject matter. Kretovics (1999) focused on one's changing patterns of self-efficacy when investigating the effectiveness of an MBA program. Using the pretest-posttest technique, this study successfully found that students' participation in the MBA program did have significant and positive impacts on their self-confidence with regard to 12 generic skill elements. In this study, the Learning Skill Profile (LSP) developed by Boyatzis and Kolb (1995) was applied as the measurement instrument to capture one's self-efficacy (self-confidence) of the generic skills obtained from the MBA program. Along a similar line, Boyatzis *et al*. (2002) examined the effectiveness of MBA programs using data collected from a 50-year longitudinal study at a university in the US. Applying the same LSP instrument, this study found that MBA programs contributed to improve the self-reported efficacy of

ones analytic ability.

In accounting literature, Arquero *et al*. (2007) did not specifically address self-efficacy but rather focused on apprehensive attitudes toward communication skills by students from UK and Spanish universities. They discovered that accounting students had a significantly higher level of communication apprehension than non-accounting students regardless of their nationality. This result was also found in the US by Fordham and Gabbin (1996), who concluded that accounting major students appeared to have an above average level of communication apprehension than those who did not major in accounting. However, few studies in Australia have been undertaken to address such attitudes or beliefs of generic skills among tertiary accounting students in terms of the effectiveness of current accounting programs to provide these. Accordingly, it is important to examine the extent to which students' choice of a major in accounting could assist them in achieving a higher self-efficacy of generic skills. To address this research question, the following hypothesis was developed in null form.

H_0-1: Student's choice of a major in accounting in an Australian university has no significant relationship to their self-efficacy of generic skills.

In addition, and as suggested by IFAC, if innovative skill development units have been effectively integrated into the tertiary curriculum, then current students who are majoring in accounting should have a unique profile of skills self-efficacy relative to those who are not majoring in accounting. So this current study also compares the self-efficacy profiles of these two types of students. Among previous studies from different disciplines, Scott and Mallinckrodt (2005) investigated self-efficacy between science major and non-science major students studying at the undergraduate level. They discovered that students majoring in science had significantly higher self-efficacy of science compared to those who

were undecided or had chosen a major other than science. Accordingly, this present study developed the following hypothesis to examine the differences in one's self-efficacy profile towards generic skills in accounting between students majoring in accounting and those majoring in non-accounting subjects.

H_0-2: There is no significant difference in the self-efficacy of generic skills between accounting and non-accounting students studying at the undergraduate degree level in an Australian university.

Research Methodology

Data Collection

The present study collected its data from a survey administered in September 2007 to undergraduate students studying at an Australian university located in the nation's capital. The questionnaires were distributed to students who were enrolled in both a Bachelor of Commerce and a Bachelor of Business Administration degree. In these degrees students can major in any business related subject including business administration, human relations, finance, financial planning and accounting. From a total response of 174 students, 165 students were identified as effective respondents while nine participants were eliminated due to their incompletion of questionnaires. Thus, the effective response rate was 94.8%. Descriptive information is shown in Table 1. This table reports that our sample includes 85 students who majored in accounting (referred to as accounting students) and 80 students who majored in a business subject other than accounting (non-accounting students). Chi-square tests were applied in our preliminary analyses to examine possible differences in distributions of several demographics between these two student groups. These results, also reported in Table 1, indicated that there are no significant differences in gender, job experiences and first language but there was a significant difference in terms of aca-

Table 1: Descriptive Information

	Accounting Students (85)	Non-accounting Students (80)	Total (165)	t-value Chi-square
Age (AGE)				
Max	44	49	49	
Min	18	17	17	
Mean (Std. Dev.)	23.33 (5.64)	22.63 (5.09)	22.99 (5.38)	0.839*
Academic year				
First year	12 (14.1%)	22 (27.5%)	34 (20.6%)	14.214***
Second year	51 (60.0%)	27 (33.8%)	78 (47.3%)	
Third year	18 (21.2%)	19 (23.8%)	37 (22.4%)	
More than fourth year	4 (4.7%)	12 (15.0%)	16 (9.7%)	
Gender (GEN)				
Male	45 (52.9%)	41 (51.3%)	86 (52.1%)	0.092**
Female	40 (47.1%)	39 (48.7%)	79 (47.9%)	
Job Experience (JOB)				
With experiences	64 (75.3%)	65 (81.3%)	129 (78.2%)	0.857**
Without experiences	21 (24.7%)	15 (18.8%)	36 (21.8%)	
Language (LAN)				
English as 1st language	47 (55.3%)	50 (62.5%)	97 (58.8%)	1.011**
English as 2nd language	38 (44.7%)	30 (37.5%)	68 (41.2%)	

*Not significant as per the t-test, **not significant as per the Chi-square test, ***significance by the Chi-square test at the 0.01 level

demic year. As this attribute left open the question of homogeny among the two student groups, this effect should be considered in our primary analysis.

Questionnaire Development

To assess respondents' self-efficacy of obtained generic skills, this study applied the instrument of Learning Skills Profile (LSP) developed by Boyatzis and Kolb (1995). This measurement was designed to assess individuals' learning skills, which are deemed important in business and management education. In Boyatzis and Kolb (1995), learning skill is defined as "generic heuristic(s) that enables mastery of a specific domain", so this concept is likely to overlap our

Table 2: Categories and Elements of Learning Skill Profile

Skill Category	Skill Element	Description
1. Interpersonal Skills (set of abilities representing people-oriented, feeling, sensing skills)	1. Leadership	The ability to inspire and motivate others, to sell your ideas to others, to negotiate and build team spirit
	2. Relationship	The ability to establish trusting relationships with others, to facilitate communication and cooperation and to work with teams
	3. Help	The ability to be sensitive to others, to aid others in gaining opportunities to grow and to be self-aware
2. Information Skills (set of abilities which enable one to take in and organise new information)	4. Sense Making	The ability to adapt, to change, to deal with new situations and to define new strategies and solutions
	5. Info. Gathering	The ability to be sensitive to and aware of organizational events, to listen with an open mind, and to develop and use various sources for receiving and sharing information
	6. Info. Analysis	The ability to assimilate information from various sources, to derive meaning and to translate specialized information for general communication and use
3. Analytical Skills (set of cognitive thinking abilities that enable one to process ideas)	7. Theory	The ability to adapt a larger perspective, to conceptualize, to integrate ideas into systems or theories and to use models or theories to forecast trends
	8. Quantitative	The ability to use quantitative tools to analyze and solve problems, and to derive meaning from quantitative reports
	9. Technology	The ability to use computers and computer networks to analyze data and organize information and to build computer models or simulation
4. Behavioral Skills (set of abilities associated with taking action and making things happen)	10. Goal Setting	The ability to establish work standards, to monitor and evaluate progress toward goals and to make decisions based on cost-benefits
	11. Action	The ability to commit to objectives, to meet deadlines, to be persistent and to be efficient
	12. Initiative	The ability to seek out and take advantage of opportunities, to take risks and make things happen

Boyatzis and Kolb (1993)

generic skills definition. Their original LSP uses a 72-item, modified Q-sort assessment instrument to capture respondents' learning skills. Subjects were asked to place each of 72 skill statements into one of seven stacks reflecting their own perception level of the particular skill. The stacks are labeled: one for no skill or experience in this area; two for now learning this skill; three for can do this with some help; four for a competent performer in this area; five for an above average performer in this area; six for an outstanding performer in this area; and seven for a leader or creator in this area. The 72 skill statements constitute 12 skill elements and these skill elements were also categorized into four skill categories (see Table 2). The present study modified the card-based Q-sort assessment into a questionnaire-based instrument.

Reliability of LSP

Some previous studies have confirmed the reliability of the LSP with reference to Cronbach alphas. For example, Boyatzis and Kolb (1991) computed Cronbach alphas for MBA students' 12 skill elements, and they ranged from 0.618 to 0.917 with an average of 0.778. A later study by Kretovics (1999) also reported that the alphas for postgraduate students studying at the master's level ranged from 0.651 to 0.935 with an average of 0.830. Similarly, the present study obtained Cronbach alphas (See Table 4) and they were found to range from 0.780 (quantitative skill) to 0.900 (goal setting skill). The average alpha score was found to be 0.858. Thus, compared to previous results, this current study is sufficiently reliable in terms of internal consistency.

Analysis Techniques

Multiple Regression Analysis

Multiple regression was used to examine hypothesis H_0-1. This analysis method was applied in order to clarify possible relationships between a student's

major in accounting and his/her own self-efficacy of generic skills. The independent variable was students' response on whether they were majoring in accounting or another subject (MAJ). Each score representing students' self-efficacy towards the four generic skill categories were used as the dependent variables. These dependent variables were interpersonal skills (INTE), information skills (INFO), analytical skills (ANAL) and behavioral skills (BEHA). Each skill category individually consisted of three skill elements from a possible 12 elements. The scores for the 12 skill elements were aggregated from the responses students gave from the original 72 questions. Consequently, four multiple regressions were conducted according to each category of the four skill types.

In addition, four independent variables were added to each regression analysis to control a possible compounding effect/s on the dependent variable. Bandura (1986) indicated that differences in demographic variables between certain groups could be responsible for differences in self-efficacy. Thus, the independent variables considered in this study were gender (GEN), job experiences (JOB), native language (LAN) and academic year (ACA).

Gender

Previous psychology literature contains studies indicating females are less confident than males in their abilities in mathematics, problem solving, computing and science (Campbell and Hackett, 1986; Hyde *et al.*, 1990; Webster and Ellis, 1996 and Cassidy and Eachus, 2002). More recently Webster *et al.* (2004) examined gender differences in terms of performance and self-confidence, of which definition included self-efficacy, when dealing with professional financial analysis. The results indicated that while no significant correlations existed between gender and the six performances of financial analysis, their analysis of variance (ANOVA) partly demonstrated that the performance over two activities for males was significantly higher than those for females. Other research by Busch (1995)

using Norwegian business undergraduate students found significant differences in self-efficacy in computing subjects between male and female students although self-efficacy between the two sexes in the other primary business related subjects including financial analysis was relatively small. Because accounting incorporates financial analysis and computing competence, the present study considered this gender factor in the analysis model.

Job experiences

Bandura (1986) theoretically predicted that past experience and the actual involvement in related tasks would help individuals develop higher confidence in accomplishing a task. Previous studies have confirmed his prediction by empirical research into computer experience (Cassidy and Eachus, 2002), entrepreneurial experience (Zhao *et al*., 2005) and work experience as counselors (Tang *et al*., 2004). These studies commonly found that prior related experiences were significantly and positively correlated with one's self-efficacy for each activity. In particular, Cassidy and Eachus (2002) conducted stepwise multiple regression analysis and discovered that previous experience with computers was the most important predictor of computer user self-efficacy compared to other attributes such as gender and perceived familiarity. So this current study attempts to control students' work experience in considering students' self-efficacy of generic skills because generic skills, which are generally defined as transferable qualities commonly required across any type of job or industry (De Lang *et al*., 2006), would be accessible qualities for students who are working or had previous work experiences.

Language

Many Australian tertiary institutions consist of multi-cultural classrooms where students from various nationalities and cultural backgrounds study

together (DEEWR, 2008). In such circumstances, students' cultural attributes may be a strong driver of their self-efficacy of generic skills. Although instructions are delivered in English, for many of these students English is their second language. Other studies have supported such influences of cultural diversity observed in the classroom. For example, Arquero *et al*. (2007) tried to compare communication apprehension for accounting students learning in the UK and Spanish universities. They discovered that there are notable differences between the students from the two countries in their specific communication apprehension profile. An Australian study by Fan and Mak (1998) also investigated differences in social self-efficacy between three students groups (Anglo-Australian, Australia-born and immigrants) according to both their own and their parents' language attributes. The results showed that immigrant students tended to have a lower level of social self-efficacy than Australia-born students. Considering the results of these prior works, our study used students' native language as the surrogate to control the influence of cultural factors toward self-efficacy of generic skills.

Academic year

As previously mentioned preliminary analysis on students' academic year posed the question of homogeneity between accounting and non-accounting students. Therefore this attribute has to be considered in this current model. Previous studies have not really addressed the effect of academic year on students' self-efficacy. Instead, some studies have examined the role of age as one of the primary control variables. In our cohort, a student's age will increase simultaneously to their academic year progression. Tang *et al*. (2004) investigated whether age has a positive relationship with students' self-efficacy for counseling skills along with other demographic variables. The study failed to find any significant linkage between self-efficacy and age. In contrast, Czaja *et al*. (2006)

investigated the impact of age on computer usage self-efficacy and discovered that older and middle-aged adults had a significantly lower self-efficacy with respect to the use of computers than did younger adults. The results of those studies indicate that the influence of age and academic year may vary according to what individuals perceive themselves to be efficacious to.

Based on the target variable and control variables, four multiple regression formulas were developed as shown below:

$$INTE = \alpha + \beta_1 GEN + \beta_2 JOB + \beta_3 LAN + \beta_5 ACA + \beta_4 MAJ + \varepsilon$$
$$INFO = \alpha + \beta_1 GEN + \beta_2 JOB + \beta_3 LAN + \beta_5 ACA + \beta_4 MAJ + \varepsilon$$
$$ANAL = \alpha + \beta_1 GEN + \beta_2 JOB + \beta_3 LAN + \beta_5 ACA + \beta_4 MAJ + \varepsilon$$
$$BEHA = \alpha + \beta_1 GEN + \beta_2 JOB + \beta_3 LAN + \beta_5 ACA + \beta_4 MAJ + \varepsilon$$

Where

INTE = score of self-efficacy for interpersonal skill category measured by the LSP

INFO = score of self-efficacy for information skill category measured by the LSP

ANAL = score of self-efficacy for analytical skill category measured by the LSP

BEHA = score of self-efficacy for behavioural skill category measured by the LSP

GEN = 1 for male; 0 for female

JOB = 1 for with job experiences; 0 for without job experiences

LAN = 1 for English as a first language; 0 for English as a second language

ACA = 1 for first year students; 2 for second year students; 3 for third year students; 4 for more than fourth year students

MAJ = 1 for accounting major; 0 for non-accounting major

ε = error term

T-test Analysis

This study applied a t-test to address hypothesis H_0-2. This technique allowed us to investigate possible differences in the self-efficacy of generic skills between accounting and non-accounting students. Using the t-test, the average scores of self-efficacy captured for the four skill categories and the 12 skill elements were compared between these two student groups.

Results

Multiple Regression Result

Multiple regression analyses using the stepwise method were carried out to examine statistical relationships between students' choice of an accounting major and their score of self-efficacy towards the four generic skill categories. Four control variables were incorporated into each regression model. The results are shown in Table 3. Firstly Panel A displays the results of our stepwise regression for interpersonal skills (INTE). According to this result, students' job experiences (JOB) had a significant and positive relationship with the score of interpersonal skill (INTE) at the 0.01 level. The other four variables were excluded from this analysis using the stepwise technique. The F-statistics and R^2 (adjusted R^2) for this regression were reported as 48.433 and 0.233 (0.229) respectively with a p-value of 0.000. Secondly, the regression results for information skills (INFO) are shown in Panel B. This result showed that students' job experiences (JOB) and their native language of English (LAN) had significant and positive associations with the information skill score at the 0.01 and 0.1 levels, respectively. The other three variables were also excluded from this model. According to this regression, the F-statistics and R^2 (adjusted R^2) were reported as 17.984 and 0.185 (0.175) respectively, with a p-value of 0.000. Thirdly, the score for analysis skill (ANAL) was regressed with independent variables and the result is displayed in Panel C. For this, it was found that the four independent variables of gender

Table 3: Multiple Regression Results

Panel A: Interpersonal Skills (INTE)

	Unstandardized Coefficient		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	69.171	2.463		28.084	0.000	
JOB	19.376	2.784	0.483	6.959	0.000*	1.000

R = 0.483, R^2 = 0.233, Adjusted R^2 = 0.229, F-statistics = 48.433, p-value = 0.000*

Panel B: Information Skills (INFO)

	Unstandardized Coefficient		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	68.304	2.477		27.577	0.000	
JOB	13.472	3.017	0.353	4.465	0.000*	1.212
LAN	4.480	2.530	0.140	1.771	0.079***	1.212

R = 0.431, R^2 = 0.185, Adjusted R^2 = 0.175, F-statistics = 17.984, p-value = 0.000*

Panel C: Analytical Skills (ANAL)

	Unstandardized Coefficient		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	65.339	3.087		21.166	0.000	
GEN	4.054	2.390	0.125	1.696	0.092***	1.016
JOB	10.410	3.184	0.265	3.269	0.001*	1.228
LAN	5.257	2.658	0.159	1.978	0.050**	1.217
MAJ	4.280	2.381	0.132	1.797	0.074***	1.009

R = 0.408, R^2 = 0.166, Adjusted R^2 = 0.145, F-statistics = 7.789, p-value = 0.000*

Panel D: Behavioural Skills (BEHA)

	Unstandardized Coefficient		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	65.914	2.498		26.383	0.000	
JOB	18.911	2.824	0.469	6.696	0.000*	1.000

R = 0.469, R^2 = 0.220, Adjusted R^2 = 0.215, F-statistics = 44.841, p-value = 0.000*

*significance at the 0.01 level, **significance at the 0.05 level, ***significant at the 0.1 level

(GEN), job experiences (JOB), native language of English (LAN) and choice of a major in accounting (MAJ) had significant and positive associations with the score for analysis skills (ANAL). Only the factor of academic year (ACA) was excluded from this model. Each degree of significance was at the 0.01 level for job experiences (JOB), 0.05 level for native language of English (LAN) and 0.1 level for both gender (GEN) and choice of major in accounting (MAJ). The F-statistics and R^2 (adjusted R^2) of this regression was 7.789 and 0.166 (0.145) respectively with a p-value of 0.000. Fourthly, Panel D exhibits the result of regression for behavioural skills (BEHA). The findings showed a significant and positive relationship between the score for behavioural skill (BEHA) and students' job experiences (JOB). The other four variables were excluded from this analysis. The F-statistics and R^2 (adjusted R^2) were reported as 44.841 and 0.220 (0.215) respectively with a p-value of 0.000.

Variance inflation factors (VIF) for independent variables were also calculated to examine any multicollinearity issues. VIFs greater than ten can generally indicate a serious multicollinearity problem. The scores for our four regressions ranged from 1.009 (MAJ) to 1.228 (JOB), which were sufficiently small enough to reject this concern in this regression model. Therefore, hypothesis H_0-1 was statistically rejected.

T-test Result

Hypothesis H_0-2 attempted to explore statistical differences in average scores of self-efficacy towards the four generic skill categories between accounting and non-accounting students. Table 4 shows the results of the t-tests that were used to explore such differences. The results reported no significant difference in these skill categories between the two students groups. Additionally, the 12 generic skill elements were also examined via t-tests because the four skill categories substantially consisted of these 12 skill elements. These additional t-tests re-

Table 4: Self-efficacy of Generic Skills Among Australian Students

(n) Skill Elements	Accounting students (85) Mean (Std. Dev.)	Rank	Non-accounting students (80) Mean (Std. Dev.)	Rank	T-test t-value	Alpha
Help	28.06 (5.79)	1	28.41 (5.49)	2	–0.247	0.837
Action	28.14 (5.61)	2	27.93 (6.29)	4	0.233	0.879
Relationship	28.06 (5.79)	3	28.58 (6.16)	1	–0.554	0.891
Technology	28.02 (6.04)	4	26.71 (6.21)	8	1.374	0.852
Quantitative	27.78 (6.12)	5	25.61 (5.66)	11	2.351*	0.780
Info. Analysis	27.68 (5.43)	6	26.86 (5.59)	7	0.954	0.858
Sense Making	27.48 (5.87)	7	27.34 (5.39)	6	0.165	0.876
Initiative	27.21 (6.08)	8	27.65 (6.14)	5	–0.460	0.873
Info. Gathering	27.22 (5.48)	9	26.19 (5.33)	10	1.230	0.805
Leadership	27.14 (5.92)	10	28.18 (6.11)	3	–1.103	0.876
Theory	26.99 (5.80)	11	26.54 (5.97)	9	0.491	0.872
Goal Setting	25.12 (5.76)	12	25.06 (5.93)	12	0.061	0.900
Average Score	27.42 (5.24)	–	27.08 (5.18)	–	0.410	0.858
Skill Categories	Mean (Std. Dev.)	Rank	Mean (Std. Dev.)	Rank	t-value	
Interpersonal Skills	83.40 (16.37)	1	85.16 (16.90)	1	–0.680	–
Analytical Skills	82.79 (16.75)	2	78.86 (15.74)	4	1.549	–
Information Skills	82.39 (16.06)	3	80.39 (15.52)	3	0.813	–
Behaviour Skills	80.47 (16.38)	4	80.64 (17.22)	2	–0.064	–
Average Score	82.26 (15.74)	–	81.26 (15.56)	–	0.410	–

*significance at the 0.05 level

vealed that there was a significant and positive difference in the score for quantitative skill between accounting and non-accounting students at the 0.05 level. This skill element was one of the components of the analytical skill category.

The rankings for self-efficacy among the four skill categories were compared between accounting and non-accounting students. It was initially found that both student groups commonly rated their score for interpersonal skill as the highest skill category. Cursory comparison also revealed that accounting students valued their own self-efficacy of analytical skill category as the second strongest while non-accounting students had the lowest self-efficacy for this skill type. In con-

trast, the ranking of self-efficacy of behavioural skills for non-accounting students was rated second strongest compared to having the lowest rank for accounting students.

This study also compared the strength of self-efficacy among the 12 skill elements for each student group. Again cursory comparisons found that the two elements of technology skills and quantitative skills were valued relatively lower by non-accounting students compared to accounting students. On the other hand, the self-efficacy scores for initiative skills and leadership skills were ranked higher for non-accounting students compared to accounting students.

Interpretation

The four multiple regressions found that students' choice of accounting in this Australian tertiary institution had a significant association only with their self-efficacy of analysis skills out of the four generic skill categories. Hence, the current accounting curriculum drives students' self-efficacy in terms of analytical skills only. Accordingly, we can interpret that accounting curriculums do not have significant impacts on undergraduate students in their attempt to obtain higher self-efficacy toward the other three skill categories of interpersonal skills, information skills or behavioural skills. These findings indicate that accounting programs only effectively work to encourage accounting students to improve their self-efficacy in a limited range of the generic skills required by the accounting profession.

In contrast, it was discovered that the control variable of students' job experiences was significantly and positively associated with the self-efficacy of all four generic skill types. According to the results, this factor was also the strongest predictor to explain the validity of each regression model. This means that student's extra-curricular work experiences are more influential and effective in enhancing their self-efficacy of overall generic skills than their choice of an

accounting major at university. This finding confirms an urgent need for work integrated learning (WIL) such as work placements, internships and cadetships to be included in our formal accounting education curriculum.

Another interesting finding was that students' first language of English is a strong predictor for high scores of self-efficacy toward information skills and analysis skills. This is an important issue for Australian tertiary institutions due to the high numbers of oversea students who come to study, particularly in accounting over recent decades (Birrell, 2006). As far as language is concerned, it is worth noting that this attribute was not significant in terms of interpersonal skills and behavioural skills which are likely to be related to literal and social ability. However language is important for information skills and analytical skills, both of which reflect non-verbal and technical skills. As our demographic data found, more than 40% of accounting students possess English as a second language so a focus on language proficiency by faculties or universities may effectively improve students' self-efficacy of these related generic skills.

A significant correlation on gender difference did appear for analysis skills for female students where they tended to have a lower self-efficacy. For this current study, analytical skills contain elements of quantitative skills, technology skills and theoretical skills. This finding is consistent with previous studies, which found that females have a lower confidence level in their mathematical abilities (Campbell and Hackett, 1986; Hyde *et al*., 1990); computer abilities (Cassidy and Eachus, 2002) and financial analysis abilities (Webster *et al*., 2004: Webster and Ellis, 1996) compared to their male counterparts. However, this control variable showed no correlation with the self-efficacy of the other three skill categories. So while it is true that the proportion of female accounting students have been increasing over time, gender impact towards the overall generic skill self-efficacy is deemed sufficiently small.

The study also calculated average scores of self-efficacy for the four generic

skill categories and the 12 skill elements and compared these between accounting and non-accounting students. Cursory comparison of the mean scores for the four skill categories indicated that both student groups commonly ranked self-efficacy of interpersonal skills as the highest. Previous Australian research by De Lang *et al.* (2006) provided a similar finding in their factor analysis, where interpersonal/communication skills were perceived by graduates as the most important skill necessary to become a successful accounting professional. This present study provided further evidence that current accounting students have a stronger self-efficacy of interpersonal skills compared to non-accounting students. However, it should noted that self-efficacy of interpersonal skills is beyond the impact that accounting programs may provide because our regression results found that choice of an accounting major was not a significant predictor to explain students' self-efficacy of such skills. Rather our regression analyses showed that students' choice of an accounting major provides them with a stronger self-efficacy in terms of analytical skills (second highest) compared to non-accounting students who rated these skills as being the lowest. This may be attributed to accounting major students studying toward an accounting qualification.

Although the difference in scores for analytical skills was not significant between accounting and non-accounting students, our further t-test for the 12 skill elements found a significant difference in self-efficacy of quantitative skills between the same cohort. As quantitative skills were one of the breakdown elements from analytical skill types (see Table 2), it would be plausible to assume that such a difference reflects the cursory difference in holistic analysis skill scores between the two student groups. Similarly, although not significant, it is interpreted that a relatively higher self-efficacy for technology skills for accounting students compared to non-accounting students is helping raise the ranking of analytical skills. These findings imply that taking an accounting course would effectively motivate students to improve these particular skill elements. Con-

versely it is also true that improvement in other generic skills rely strongly on attributes other than the choice of an accounting major.

Conclusion

The objective of this study was to explore accounting and non-accounting undergraduates' self-efficacy of generic skills. By studying this, an attempt was made to identify whether a student's choice of a major in accounting develops generic skills and to what extent this occurs. The data for the study were taken from undergraduate business students in an Australian tertiary institution. This is the first study that has provided empirical evidence of possible correlations between students' self-efficacy of generic skills and their choice of a major in accounting. The findings have indicated that accounting programs produce a limited impact on improving students' self-efficacy in relation to what is required in today's accounting profession. An improvement was found in self efficacy of analytical skills only. Further analysis confirmed that there were other stronger predictors such as job experience and the native language of English, which would affect students' higher self-efficacy of generic skills. These outcomes do not look good for accounting instructors in the higher education sector. Simply by studying accounting students do not gain higher self-efficacy for all the types of generic skills demanded by the profession. However such information is very useful in our attempt to redesign or reform existing or potential weaknesses in current accounting curriculums. For example, a possible suggestion could be to incorporate more special learning activities such as work integrated learning (WIL) including work experience and internships into reformed curriculums. It was also found that by providing further student support for language development would be beneficial to international students who have English as their second language. This would have the effect of stimulating their self-efficacy toward the information and analytical generic skills.

Despite the above contributions, our study does have several limitations. Among them, the primary limitation was that the study was undertaken at only one point of time in the semester and at only one university in order to measure the effect that an accounting program has on students' self-efficacy toward generic skills. A better method would be to compare self-efficacy scores both before and after students take these programs and across more than one university. Similar studies that addressed course effectiveness on improving one's self-efficacy included Boyatzis and Kolb (1995) and Boyatzis *et al*. (2002) who applied a pretest-posttest technique, which measured actual changes in self-efficacy before and after taking courses. These were used as the proxies for course effectiveness. In this regard, our study can be further extended by the pretest-posttest technique to resolve this limitation. Using such cohorts from one university could also be considered a serious limitation in that this may only allude to a very small section of the whole generic skills issue. Differences may arise when applying this result to the general population where other important constraints may prevail.

Notwithstanding these limitations, this study successfully contributes to the growing literature on students' self-efficacy by providing the first empirical evidence on the effect that an undergraduate accounting curriculum in Australia has on developing students' self-efficacy of generic skills. Tertiary educators, by revamping current accounting programs, will assist future graduates develop a full range of generic skills necessary for them to compete in today's competitive accounting environment.

Bibliography

Accounting Education Changing Commission (AECC) (1990) Objectives of education for accountants: position statement No.1, *Issues in Accounting Education 5*, : AECC, pp.307–312.

Albrecht, W. S. and R. J. Sack (2000) *Accounting Education: Charting the Course through*

a Perilous Future, Accounting Education Series, 16 (Sarasota, FL: the American Accounting Association).

American Institute of Certified Public Accountants (AICPA) (1999) *Core Competency Framework for Entry into the Accounting Profession,* NY: AICPA.

Arquero, J. L., T. Hassall, J. Joyce and J. A. Donoso (2007) Accounting Students and Communication Apprehension: A Study of Spanish and UK students, *European Accounting Review*, 16(2), pp.299–322.

Baker, W. and C. C. McGregor (2000) Empirically Assessing the Importance of Characteristics of Accounting Students*, Journal of Education for Business*, 75 (3), pp.149–157.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology,* 52 (1), 1–26.

Bandura, A. (1999) Social cognitive theory of personality, In L. Pervin & O. John (Eds.), *Handbook of Personality* 2nd. ed., (New York: Guilford).

Bandura, A. (1997) *Self-efficacy: The exercise of control*. (New York: W. H. Freeman).

Bandura, A (1986) *Social Foundations of Thought and Action: A Social Cognitive Theory*, Englewood Cliffs, (NJ: Prentice Hall).

Bandura, A. (1982) Self-efficacy mechanism in human agency, *American Psychologist,* 37(2), pp.122–147.

Bandura, A. (1977) Self-efficacy: Towards a Unifying Theory of Behavioral Change, *Psychological Review*, 84(2), pp.191–215.

Birkett, W. P. (1993) *Competency based Standards for Professional Accountants in Australia and New Zealand*, Sydney; Institute of Chartered Accountants in Australia and the New Zealand Society of Accountants.

Birrell, B (2006) *The Changing Face of the Accounting Profession in Australia, Report prepared for CPA Australia*, CPA Australia; Centre for Population and Urban Research Monash University.

Bouffard-Bouchard, T., S. Parent and S. Larivee (1991) Influence of self-efficacy on self-regulation and performance among junior and senior high-school-aged students, *International Journal of Behavioral Development*, 14(2), pp.153–164.

Boyatzis, R. E., E. C. Stubbs and S. N. Taylor (2002) Learning Cognitive and Emotional Intelligence Competencies Through Graduate Management Education, *Academy of Management Learning and Education*, 1(2), pp.150–162.

Boyatzis, R. E. and Kolb, D. A. (1995) From learning styles to learning skills: the executive skills profile, *Journal of managerial Psychology*, 10(5), pp.3–17.

Boyatzis, R. E. and Kolb, D. A. (1993) *The Boyatzis-Kolb learning Skills Profile–partici-*

pant workbook, (Hay Resources Direct; Boston).

Boyatzis, R. E. and Kolb, D. A. (1991) Assessing individuality in learning: the learning skills profile, *Education Psychology*, 11(3), pp.279–295.

Busch, T. (1995) Gender differences in self-efficacy and attitudes toward computers, *Journal of Educational Computing Research*, 12(2), pp.147–158.

Cable, D., M. Dale and R. Day (2007) Accounting Education: The gap between academic study and professional practice, *Proceedings of the second innovation in accounting and corporate governance education conference*, Hobart, Australia.

Campbell, N. D. and G. Hackett (1986) The effects of mathematics task performance on math self-efficacy and task interest, *Journal of Vocational Behavior*, 28(2), pp.149–162.

Cassidy, S. and P. Eachus (2002) Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender and experience with computers, *Journal of Educational Computing Research*, 26(2), pp.133–153.

Czaja, S., N. Charness, A. Fisk and J. Sharit (2006) Factor Predicting the Use of Technology: Findings From the Center for Research and Education on Asing and Technology Enhancement (CREATE), *Psychology and Aging*, 21(2), pp.333–352.

Department of Education, Employment and Workplace Relations (DEEWR) (2008) *Students 2007 (first half year): Selected Higher Education Statistics*, Canberra: Administrative and corporate publications.

De Lange, P., B. Jackling and A. Gut (2006) Accounting graduates' perceptions of skills emphasis in undergraduate courses: an investigation from two Victorian universities, *Accounting and Finance*, 46(3), pp.365–386.

Fan, C. and A. Mak (1998) Measuring social self-efficacy in a culturally diverse student population. *Social Behavior and Personality*, 26(2), pp.131–144.

Fordham, D. R. and Gabbin, A. L. (1996) Skills versus apprehension: empirical evidence on oral communication, *Business Communication Quarterly*, 59(3), pp.88–98.

Gammie, B., E. Gammie and E. Cargill (2002) Personal skills development in the accounting curriculum, *Accounting Education; an international journal*, 11(1), pp.63–78.

Hawkes, L. C., M. Fowler and L. M. Tan (2003) *Management accounting education: Is there a gap between academia and practitioner perceptions?*, Massey University, School of Accountancy Discussion Paper Series 215.

Hutchinson, P. and G. Fleischman (2003) Professional certification opportunities for accountants, *CPA Journal*, 73, pp.48–50.

Hyde, J. S., E. Fennema, M. Ryan, L. A. Frost and C. Hopp (1990) Gender comparisons of

Papers of the Research Society of Commerce and Economics, Vol. XLIX No. 2
mathematics attitudes and affect: a meta-analysis, *Psychology of Women Quarterly*, 14(3), pp.299–324.

International Federation of Accountants (IFAC) (1996) *Prequalification Education, Tests of Professional Competence and Practical Experience of Professional Accountants, International Education Guideline No.9 (IEG 9)*, (New York: IFAC).

International Federation of Accountants (IFAC) (2003) *International Education Standard (IES) 3 Professional Skills*, (New York: IFAC).

Institute of Chartered Accountants in Australia (ICAA) (1998) *The CFO of the future*, prepared by M. Simister, P. Roest and J. Sheldon of KPMG for the Chartered Accountants in Business Committee, (Sydney: ICAA).

Institute of Chartered Accountants in Australia (ICAA) (2001) *The New CFO of the Future: Finance Functions in the Twenty-first Century*, prepared by M. Simister for KPMG consulting for the ICAA, (Sydney: ICAA).

Institute of Chartered Accountants in Australia (ICAA) and CPA Australia (2008) *Professional Accreditation Guideline for Higher Education Programs*, (ICAA and CPA Australia; Sydney and Melbourne).

Institute of Chartered Accountants in England and Wales (ICAEW) (1996) *Added-Value Professionals: Chartered Accountants in 2005*, A Consultation Document, (London: ICAEW).

Kretovics, M. A. (1999) Assessing the MBA: What do our students learn?, *The Journal of Management development*, 18(2), pp.125–136.

Lin, Z. Jun, X. Xiong and M. Liu (2005) Knowledge base and skill development in accounting education: Evidence from China, *Journal of Accounting Education*, 23(3), pp.149–169.

Mathews, R., M. Jackson and P. Brown (1990) *Accounting in Higher Education: Report of the Review of the Accounting Discipline in Higher Education: Volume 1,* (Canberra; Australian Government).

Mohamed, E. K. A. and S. H. Lashine (2003) Accounting Knowledge and Skills and the Challenges of A Global Business Environment, *Managerial Finance*, 29(7), pp.3–16.

New Zealand Society of Accountants Education Committee (NZSA) (1994) *Admissions Policy*, (Wellington: New Zealand Society of Accountants).

Pajares, F. (1997) Current directions in self-efficacy research, in M. Maehr and P. R. Pintrich eds. *Advances in Motivation and achievement*, 10, (Greenwich; JAI Press), pp.1–49.

Pajares, F. and J. Kranzler (1995) Self-efficacy beliefs and general mental ability in math-

ematical problem-solving, *Contemporary Educational Psychology*, 20(4), pp.426–443.

Scott, A. B. and B. Mallinckrodt (2005) Parental Emotional Support, Science Self-Efficacy, and Choice of Science Major in Undergraduate Women, *Career Development Quarterly*, 53(3), pp.263–273.

Simister, M., P. Roest and J. Sheldon (1998) *The CFO of the Future*, Sydney; KPMG consulting for the ICAA.

Simister, M (2001) *The New CFO of the Future*, Sydney; KPMG consulting for the ICAA.

Smith, P. A. (2001) Understanding Self-Regulated Learning and Its Implications for Accounting Educators and Researchers, *Issues in Accounting Education*, 16(4), pp.1–38.

Tang, M., K. D. Addison, D. LaSure-Bryant, R. Norman, W. O'Connell and A. Stewart-Sicking (2004) Factor That Influence Self-Efficacy of Counseling Students: An Exploratory Study, *Counselor Education & Supervision*, 44(1), pp.70–80.

Usoff, C. and D. Feldmann (1998) Accounting Students' Perceptions of Important Skills for Career Success, *Journal of Education for Business*, 73(4), pp.215–220.

Webster, R. L., T. S. Ellis and B. J. Bryan (2004) Similarities and differences between the sexes in financial analysis and self-confidence, *Academy of Accounting and Financial Studies Journal*, 8(1), pp.89–100.

Webster, R. L. and T. S. Ellis (1996) Men's and women's self-confidence in performing financial analysis, *Psychological Reports*, 79, pp.1251–1254.

Whitefield, D. and L. Kloot (2006) Personal and interpersonal skills: The process of prescribing definitions in an accounting degree, *Asian Review of Accounting*, 14(1/2), pp.101–121.

Zhao, H., S. E. Seibert and G. E. Hills (2005) The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions, *Journal of Applied Psychology*, 90(6), pp.1265–1272.