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FIRST YEAR ACCOUNTING STUDENTS' PERCEPTIONS OF BLENDED LEARNING

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ABSTRACT

The purpose of this study is to use student-related variables to examine their impact on students' perception of the integration of face-to-face and blended learning experience and students' learning outcomes. This study uses survey questionnaires at the beginning and end of semester. The data analysis consists of (1) a paired sample t-test and (2) a partial least squares model to analyze the effect of student-related variables on student perceptions on the integration of blended learning at the beginning and end of semester and their learning outcomes, over the three year study period. Students' perceptions at the outset were found to be important in their view of the subject and the learning experience they will enjoy. The learning experience throughout the semester affects the students' perceptions on blended learning at the end of the semester and their perceived performance in both mid and final exams. No relationship was found between prior accounting knowledge and blended learning however a positive relationship was found between prior computer knowledge and blended learning. This study provides empirical evidence of the benefits of adopting blended learning in a first year accounting subject. These findings have implications for accounting educators who can use this knowledge to motivate students to engage in blended learning and improve their learning outcome irrespective of their prior knowledge.

JEL: I20, I29, M10

KEYWORDS: Blended Learning, First Year Accounting, Experiential Learning Theory, Student Learning Outcomes

INTRODUCTION

Over the past three decades, debates have focused on what sort of teaching environment encourages effective learning (Prosser and Trigwell, 1999; Trigwell *et al*., 2000; Ramsden, 2003; Devlin and Samarawickrema, 2010; Apostolou *et al*., 2013). Today, many educators are faced with the challenge of delivering a quality learning experience to increasing student numbers with limited resources (Nunan *et al*., 2000; Dowling *et al*., 2003). In response to this, a blended learning approach has been proposed as an alternative learning model into tertiary courses (Tinker, 2002). A blended learning environment integrates traditional face-to-face delivery with digital and online facilities (Garrison and Kanuka, 2004). It is assumed that students learning outcomes would improve as this approach involves some form of student control over time (Singh and Reed, 2001; Bath and Bourke, 2010).

Despite calls for the adoption of blended learning by higher education institutions, there has been little empirical evidence to show that this kind of learning environment is beneficial to students who undertake the first year introductory accounting subject as part of their Commerce degree. In a UK study, Basioudis and de Lange (2009) found that the use of a web-based learning environment (Blackboard) motivated student participations in the Introduction to Financial Accounting course. However, Palm and Bisman (2010) concluded that Australian universities still predominantly adopt the traditional face-to-face approach to teaching introductory accounting courses, with limited adoptions of innovative delivery modes. On the

other hand, studies comparing traditional and blended learning approaches on teaching accounting courses have shown mixed results in terms of student outcomes (Dowling, *et al*., 2003; Jones and Chen, 2008; Keller, *et al*., 2009; Du, 2011). In the field of non-accounting studies, an increasing body of research has focused on university students' experience of blended learning in such areas as engineering (e.g., Ellis *et al*., 2008), political science (e.g., Bliuc, *et al*., 2010), social work (e.g., Ellis *et al*., 2006), and a foreign policy course of an Australian university (Bliuc, *et al*., 2010). Using both qualitative and quantitative analyses, Bliuc, *et al*. (2010) examined students' perceptions on the integration of face-to-face and blended learning experience and found that the quality of perceived integration (i.e., integrated perceptions *versus* less integrated perceptions) affected students' academic performance (i.e., final exam results).

However, prior literature has not considered the important factor of student-related variables that may influence students' perceptions on the integration of face-to-face and blended learning experience and their academic performance. These variables include prior computing experience and prior accounting knowledge. Stoner (1999) found that students' information technology (IT) skills on entry to an UK university were rising but urged accounting educators not to assume that all students are comfortable and familiar with IT. In a more recent analysis of UK students' IT application skills on entry to university, Stoner (2009) found that overall their skills had continued to improve between 1996 and 2006, however there were major differences within cohorts. In an Australian study, Kennedy *et al*., (2008) found that first year students' use of IT was not universal. Therefore, it is important to consider the effect of this variable on students' learning experience in a blended learning environment.

In terms of prior accounting knowledge, researchers (e.g., Alexander *et* al., 1994, Halabi, 2009) have argued that it is one of the most important factors in determining the extent that learning occurs in individuals. However, research studies to date have shown inconsistent findings in accounting studies, with Eskew and Faley (1988), Rankin *et al*., (2003), Byrne and Flood (2008), and Halabi (2009) found a positive relationship between prior study of accounting and performance in the first year accounting subject, while no significant association is reported in Bergin (1983), Keef (1992), and Koh and Koh (1999). With the introduction of a blended learning environment, it is timely to examine whether prior accounting knowledge has an effect on students' perceptions on the integration of face-to-face and blended learning experience and their academic performance.

The purpose of this study is to use student-related variables to examine how they impact on students' perception of the integration of face-to-face and blended learning experience and students' learning outcomes over a three-year period. Findings of this longitudinal study may have important implications for accounting educators and university policy makers in course design. The remainder of this paper is organized as follows. The next section provides theoretical context for the study by drawing on prior literature to develop a research question concerned with how student-related variables impact on the perceptions of integration of blended learning and their learning outcomes. The research method will then be outlined, followed by a presentation of the study's findings. The paper concludes with a discussion of the study's implications, limitations and a suggestion for further research.

LITERATURE REVIEW

Ramsden (2003) suggests that learning outcomes are a function of individuals' approach to learning. A student's approach to learning is in itself a function of his/her perception of task requirements, made up of both the student's orientation to studying and the context of learning (Pacharn, *et al*., 2013). By modifying the context of learning, learning outcomes can be influenced by affecting how students perceive their tasks and how they approach their studies, and therefore their performance outcomes (Koh and Koh, 1999; De Lange, *et al*., 2003; Potter and Johnston, 2006). In his seminal work on experiential learning, Kolb (1984) proposes, "learning is a process whereby knowledge is created through the transformation of experience" (p.41) and proposes a four-stage learning cycles: concrete experience, reflective observation, abstract

conceptualization, and active experimentation. In the first stage of the learning cycle, students would rely on the experience (feelings) and their ability to adapt to changes. In the second stage of the cycle, students would reflect on the experience (watching). In the third stage of the cycle, students would use theories (from lectures) rather than feelings to solve problems (thinking). In the final stage of the learning cycle, students would try out what has been learnt (doing).

In terms of experience, prior research has shown that first year accounting students' IT experience has been on the rise (see, for example, Stoner 1999 and 2009). However, some researchers also find that students' IT experience is not universal (Kennedy, *et al*., 2008). Bennett, *et al*., (2008) suggest that there is little empirical basis for the arguments about the effect of IT on students' approach to the traditional face-to-fact teaching and learning. In their research project, Hardy *et al*., (2009) concludes that the inclusion of IT by universities in their programs should be done with consideration of students' perceptions on technology.

Salmon's (2011) proposes a five-stage model of e-learning, which describes students' experience specifically in an online environment. The five stage model is based on activities that will occur at each of the stages of learning: (1) access and motivation, (2) online socialization, (3) Information exchange, (4) knowledge construction, and (5) development. Applying Salmon's (2011) model, the five stage e-learning model for the study include the following: stages 1, 2 and 3 focus on ensuring that students have access to the learning system, where to find technical support, how the learning environment works, and online networking and socializing via discussion board, discussion forum, and e-mail. The last two stages provide the structures and activities for students to complete the course requirements. Students are encouraged to use a range of online activities to support their learning process and take control of their own learning.

To undertake the research, we make changes in course design to reflect a blended learning environment in Accounting Principle, a first year accounting course at a major Business School in Australia. Traditionally, this course had been taught in a conventional mode of a two-hour lecture, and one-hour tutorial with assessment generally incorporating an assignment, a mid-semester and final exams. We were driven to reconsider our teaching approach and delivery modes due to our increasing concerns about the growing reduction in student attendance at weekly tutorials, and the number of students not completing the set weekly tutorial questions. Therefore, the overall rationale for introducing a blended learning environment to Accounting Principles was to increase student classroom attendance, promote student-centered learning and encourage increased student interaction and engagement. It was also expected that this would result in improved student performance and satisfaction with the course with a flow-on in terms of student retention in the accounting major.

The blended learning approach adopted involved the incorporation of an online computerized accounting package (My Accounting Lab) into the curriculum. The software consists of practical, multiple choice and true/false questions based on the learning objectives from each chapter of the prescribed textbook. It gives student instant feedback on whether their answers are correct and where they have gone wrong in answering questions. A holistic approach was embraced with the computerized online package integrated into the teaching resources and assessment tasks.

The traditional tutorial was changed to be an interactive two-hour workshop where students worked through questions set from the online computer package and textbook. Weekly My Accounting Lab homework computer exercises were set for students to complete in their own time and formed part of their assessment tasks. The mid-semester and final exams were written in a style largely consistent with the style used in the computerized package so that the application of skills and knowledge developed throughout the course was progressive leading into these assessment tasks. With the introduction of a face-to-face traditional teaching method with a blended learning environment, our research questions is: how do student-related variables, including prior accounting knowledge and prior computing experience, impact on students' perceptions of integration of blended learning, and their learning outcomes?

METHODOLOGY

This study uses two survey questionnaires: beginning and end of semester surveys. The beginning of semester survey consisted of three sections: student background, student experience and student opinions. The first section incorporated seven questions relating to demographic information including student number, age, gender, nationality, main language spoken at home, highest education level achieved, and the students' planned major. The second section included questions that appraised students' prior accounting and computing experience. Students were asked, on a seven point scale ranging from "1" (not at all) to "7" (to a large extent), the extent of computer use for social networking, twitter, email, spread sheeting, graphics/digital imaging and music (Kennedy *et al*., 2008). Based on an adapted version of Marriott and Lau's (2008) questionnaire, students were also asked to rate, on a seven point scale ranging from "1" (poor) to "7" (excellent), their computing skills and accounting knowledge. Additionally, students were asked on a scale ranging from "1" (not at all) to "7" (to a great extent), their prior use of formal accounting packages, online programs to aid learning, their preference for being assessed online rather than by traditional paper-based methods, and preference to a mixed approach to assessment (i.e., both online and paper-based assessment). The third section of the pre-survey was adapted from Palm and Bisman (2010) and assessed students' perceptions on whether integration of a blended learning environment would improve their performance in the course, motivate them to take responsibility for their own learning, and help them to develop comprehension, technical knowledge and broaden their interest in accounting on a seven point scale ranging from "1" (not at all) to "7" (to a great extent).

The end of semester questionnaire also consisted of three sections. The first section incorporated questions relating to changes in students' majors and the reasons why a change may have occurred. The second and third sections asked the same questions as the equivalent numbered sections on the beginning of semester survey. The second section covered students' learning experiences at the conclusion of the course concerning rating their computer skills and accounting knowledge. The third section appraised students' perceptions on the blended learning environment and their perceived improvement in academic performance. All questions were rated on a seven-point scale ranging from "1" (not at all) to"7" (to a great extent). Additionally, since prior research (see, for example, Pacharn *et* al., 2013) found that a flexible learning approach appeared to improve student academic performance, data on students' performance on a selection of assessment tasks were included in the analysis.

The course assessment items included: a mid-semester exam (20%), career development assignment (10%), weekly online computer quizzes (10%), a practice set group assignment (20%), and a final exam (40%). Consistent with Bliuc *et al*. (2010), only the performance at the mid-semester and final exams was included in the analysis. Pilot tests of both the beginning and end-of-semester surveys were conducted with six academic staff involved in teaching Accounting Principles, and six undergraduate accounting students. Their purpose was to identify potential problems associated with the ambiguity of the questions, and the appropriateness of the scales. Students enrolled in Accounting Principles were surveyed in the first (beginning of semester) and the final (end of semester) lectures across three years on two campuses (designated as Campus 1 or 2) at a large Australian university. A breakdown of the completed surveys received from the two campuses is provided in Table 1. Of the students enrolled in the course, a total of 314 matched surveys were received. This equates to a response rate of 33.9%. The same academic, adopting the same course profile, textbooks and assessment structure, conducted each year's study. While the questions in the mid-semester and final exams differed from year to year, the topics examined and types of questions were consistent. Data analysis was conducted on the entire sample (n = 314), with further testing undertaken on each of the years as sub-samples to test for differences across time.

Table 1: Breakdown of Survey Questionnaire Responses

	Beginning of Semester		End of Semester		Total Participants	
	Campus 1	**Campus 2**	**Campus 1**	**Campus 2**	**Campus 1**	**Campus 2**
2009						
Students enrolled					119	214
Survey completion	101	152	87	100		
Matched sample					81	66
2010						
Students enrolled					112	183
Survey completion	95	103	46	61		
Matched sample					24	31
2011						
Students enrolled					124	174
Survey completion	127	114	91	109		
Matched sample					49	63
Total Matched Sample (*n* = 314)					**154**	**160**

This table shows the breakdown of the survey responses received. The column labelled BEGINNING OF SEMESTER shows the number of surveys completed at the start of the survey period for each of the three years in which the survey was conducted and indicates the responses by campus. The column labelled END OF SEMESTER is the same but shows the survey responses at the end of the survey period. Finally, the column labelled TOTAL PARTICIPANTS shows by campus the number of students enrolled and the number of students for whom we received a survey response at the beginning and at the end of semester which were then matched.

A summary of the main demographic data of the sample is presented in Table 2. The average age of students was just over 20 years. The gender of the sample was fairly evenly split between females and males (49% were female and 51% were male), with almost half of the students of Australian nationality (49%) and 68% of students having completed Year 12. The majority of students were undertaking an accounting major (Beginning – 50% and End – 51.6%) with the finance major being second most popular (pre – 18.5% and post – 19.4%). Prior computing experience (PCE) was measured by eight items that included the six-item instrument adapted from Kennedy, *et al*., (2008), one item adopted from Marriott and Lau (2008), and one item that measured the extent to which students have used online computer programs in their previous learning. The descriptive statistics of the nine items are presented in Table 3.

A confirmatory factor analysis with varimax rotation of the nine items yielded three factors with eigenvalues greater than one (1.692, 1.592 and 1.333, respectively). Three items (use of spread sheeting, email, and computer skills rating) loaded on factor one, PCE1. The Cronbach's alpha value was 0.632 suggesting reliability of the scales. The other two factors consisted of two items so were therefore not included in any further analysis. The factor scores for the PCE1 variable were used in further analysis. One item did not load on any factors: 'extent of previous use of online computer programs to aid learning'. It was decided to include this item in the further analysis, as it is directly relevant to this study because it measures students' previous use of computing experience (PCE2). Prior accounting knowledge (PAK) was measured using three items, two of which that were adapted from Marriott and Lau (2008) and asked students their level of accounting knowledge. The third item measured students' familiarity with formal accounting packages such as MYOB or QuickBooks. The descriptive statistics of the three items are presented in Table 3. A confirmatory factor analysis with varimax rotation of the three items yielded one factor with an eigenvalue greater than one and a Cronbach's alpha of 0.812. The factor scores for PAK were used in further analysis.

Table 2: Sample Descriptive Statistics

Descriptive Characteristics		Sample (*N* = 314)
Age	Mean	21.33 years
	Minimum	16 years
	Maximum	42 years
	Standard deviation	5.11
	Skewness	2.06
Gender	Female	155 (49.4%)
	Male	159 (50.6%)
Nationality	Australian	156 (49.7%)
	Chinese	21 (6.7%)
	Other	137 (43.6%)
Education level	Year 12	215 (68.5%)
	Diploma	77 (24.5%)
	Degree	19 (6.1%)
Beginning of semester-Major	Accounting	157 (50%)
	Finance	58 (18.5%)
	Economics	17 (5.4%)
	Double major	27 (8.6%)
	Other	7 (2.2%)
	Undecided	48 (15.3%)
End of semester-Major	Accounting	162 (51.6%)
	Finance	61 (19.4%)
	Economics	21 (6.7%)
	Double major	36 (11.5%)
	Other	11 (3.5%)
	Undecided	23 (7.3%)

This table shows the descriptive statistics for the demographic data of the total sample used in this study. The mean, minimum and maximum, standard deviation and skewness have been calculated for each of the demographic variables of age, gender, nationality, education level at commencement of the students' degree, the major the student is completing at the beginning of the course and the major being completed at the end of the degree.

Perceptions on blended learning (PBL) was based on an adapted version of Palm and Bisman's (2010) five item instrument and assessed students' opinion in regard to the extent an online learning package would be beneficial to their learning, give immediate feedback, motivate to take responsibility for their own learning, support their learning style, and motivate them to be an active participant. The descriptive statistics of the three items are presented in Table 3. Two confirmatory factor analyses with varimax rotation of the five items (beginning and end of semester, respectively) yielded one factor with an eigenvalue greater than one for perceptions at the beginning of semester (BPBL) and one factor for perceptions at the end of semester (EPBL). The Cronbach's alpha for BPBL was 0.894 and 0.912 for EPBL, suggesting reliability of both scales. Following Bliuc, *et* al. (2010), students' learning outcomes were measured using each student's mid-semester and final exam results. As these two assessment pieces were undertaken individually and in an invigilated exam environment, it was felt that exam results were the most objective indicator of an individual student's performance.

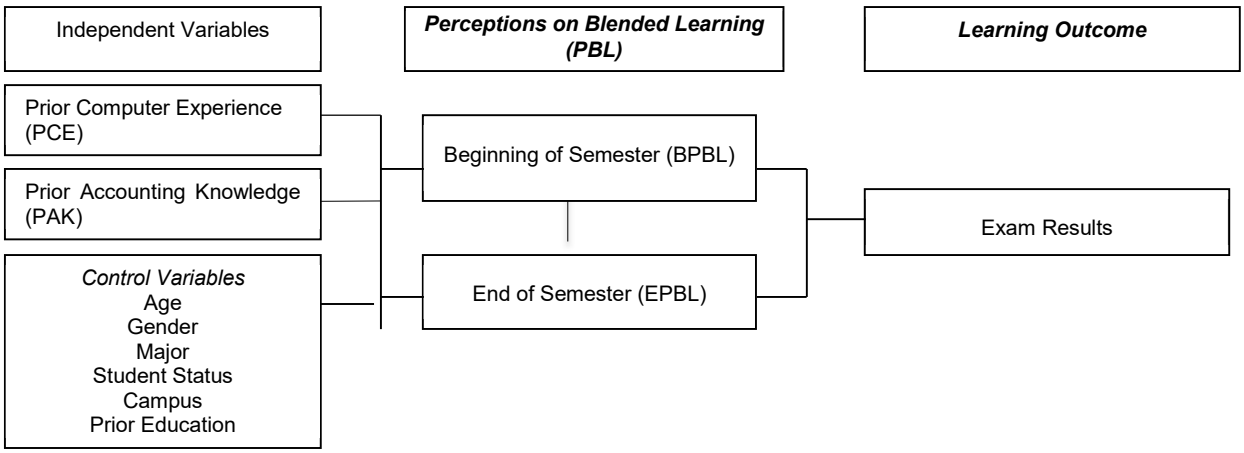
Apart from PCE and PAK, there are a number of factors that may influence students' perceptions on the integration of blended learning and their learning outcomes. These factors may include age, gender, program major, student status (domestic *versus* international), and prior education. These variables are treated as control variables. AGE variable was measured as a students' age in years. GENDER was coded as "1" for female and "2" for male. Student status (STATUS) was coded as "1" for domestic students and "2" for International students. The selected major (MAJOR) at the beginning of the semester was coded as "1" for an accounting major, and "2" for all other majors and undecided. CAMPUS was coded "1" for Campus 1 and "2" for Campus 2. The level of prior education (EDUC) was coded as "1" for completed Year 12, "2" for completed a diploma or certificate, and "3" for a previous non-accounting degree. The framework of this study is presented in Figure 1.

Table 3: Descriptive Statistics of PCE, PAK, BPBL, and EPBL Items

Items	Min.	Max.	Mean	Standard Deviation	Skewness
Prior Computer Experience (PCE) items:					
How would you rate your computing skills?	1	7	5.00	1.26	-0.52
To what extent to you use the computer for:					
(a) social networking e.g. Facebook	1	7	5.22	1.78	-1.02
(b) twitter	1	7	1.76	1.58	2.10
(c) email	1	7	5.90	1.23	-1.19
(d) spread sheeting e.g. Excel	1	7	4.08	1.69	-0.11
(e) graphics/digital imaging	1	7	3.11	1.80	0.39
(f) music	1	7	5.33	1.69	-0.89
To what extent have you used a blended computer program to aid learning?	1	7	3.67	1.76	0.04
Prior Accounting Knowledge (PAK) items:					
How would you rate your level of accounting knowledge?	1	7	3.63	1.38	-0.10
How would you rate your practical experience in accounting?	1	7	3.07	1.54	0.34
How familiar are you with formal accounting packages? (e.g. MYOB/QuickBooks)	1	7	2.74	1.68	0.64
Perception of Blended Learning at the beginning of the semester (BPBL) items:					
To what extent will on blended learning package:					
(a) be beneficial to your learning in this course?	1	7	4.80	1.31	-0.28
(b) give you immediate feedback of your understanding in this course?	1	7	5.20	1.24	-0.34
(c) motivate you to take responsibility for your own learning?	1	7	4.96	1.34	-0.54
(d) support your learning style?	1	7	4.80	1.43	-0.42
(e) motivate you to be an active participant in the learning process?	1	7	4.72	1.38	-0.39
Perception of Blended Learning at the end of the semester (EPBL) items:					
To what extent will on blended learning package:					
(a) be beneficial to your learning in this course?	1	7	5.15	1.47	-1.03
(b) give you immediate feedback of your understanding in this course?	1	7	5.37	1.31	-0.90
(c) motivate you to take responsibility for your own learning?	1	7	5.10	1.50	-0.87
(d) support your learning style?	1	7	4.93	1.43	-0.78
(e) motivate you to be an active participant in the learning process?	1	7	5.10	1.38	-0.93

This table presents the descriptive statistics for the variables of prior computer experience (PCE), prior accounting knowledge (PAK), perception of blended learning at the beginning of the semester (BPBL) and perceptions of blended learning at the end of the semester (EPBL). The minimum and maximum, mean, standard deviation and skewness are reported for each of the items loading on the variable.

Figure 1: Research Framework of the Study



This figure shows the framework for this study indicating that independent variables of prior computer experience, prior accounting knowledge and the control variables of age, gender, major, student status, campus, and prior education will influence the students' perception on blended learning in this course both at the beginning and at the end of the semester of study. The student's perception of blended learning as a learning method will influence the students learning outcome measured as exam results.

ANALYSIS OF FINDINGS

Results of the paired sample *t*-tests are presented in Table 4. For each question, the students' responses at the beginning and end of semester were compared and tested for any significance differences. Overall, nine of the sixteen comparisons were found to be significantly different. Specifically, students rated their computer skills and level of accounting knowledge significantly higher after the blended learning approach was completed (t = -5.501; $p < 0.001$ and t = -19.593; $p < 0.001$, respectively). Significant differences were found on the questions in regard to students' perceptions on blended learning being beneficial to their learning and motivating them to be an active participant (t = -3.54; $p < 0.001$ and t = -3.799; $p < 0.001$, respectively). This suggests that after experiencing the blended learning environment, students viewed it as more beneficial to their learning and motivating them to participate in their learning. Additionally, students considered blended learning would allow them to develop greater comprehension of basic accounting (t = -2.667; $p < 0.01$), provide immediate feedback (t = -1.767; $p < 0.05$), enable application of accounting knowledge (t = -1.998; $p < 0.05$), assist their understanding of procedures, terms and principles of accounting (t = -3.332; $p < 0.01$), and enable greater understanding of the conceptual significance of accounting (t = -3.098; $p < 0.01$). Students did not have higher expectations after experiencing the online learning program that it would improve their performance in the mid-semester exam, final exam and their overall grade.

Table 4: Paired Sample *t*-tests of Beginning and End of Semester Response Items

Item		T-Value	P (One Tailed)
1	Rate computing skills	-5.501*	0.000
2	Rate level of accounting knowledge	-19.593*	0.000
7	Prefer to be assessed blended rather than traditional methods	-0.696	0.243
8	Prefer a mixed approach to assessment	0.856	0.197
View blended learning program as:			
9a	Beneficial to learning	-3.54*	0.000
9b	Provide immediate feedback	-1.767*	0.039
9c	Motivate to take responsibility for learning	-1.33	0.093
9d	Support learning style	-1.448	0.075
9e	Motivate to be an active participant	-3.799*	0.000
View blended learning program will:			
11a	Provide technical knowledge	0.431	0.333
11b	Develop comprehension of basic accounting	-2.667*	0.004
11c	Enable application of accounting knowledge	-1.998*	0.024
11d	Broaden interest in accounting	-1.567	0.059
11e	Enable to judge value of accounting information	-0.617	0.269
11f	Assist understanding of procedures, terms and principles of accounting	-3.332*	0.000
11g	**Enable understanding of conceptual significance of accounting**	**-3.098***	**0.001**
View blended learning program will improve performance in:			
10a	Mid-semester exam	-1.173	0.121
10b	Final exam	0.208	0.418
10c	Overall grade	-1.108	0.135

*This table presents the results of the paired sample t-tests. For each question, the students' responses at the beginning and end of semester were compared and tested for any significance differences. *** p < 0.10 ** p < 0.01, * p < 0.05*

A PLS model was used in this study to explore the relationships between the variables, and is described by two models: (1) a measurement (or outer) model relating manifest variables or observed variables to their own latent variable; and (2) a structural (or inner) model relating latent variables to other latent variables (Tenenhaus, *et* al., 2005). The measurement model can use formative or reflective indicators. As this study only includes reflective indicators, model validation was conducted following the two phase approach outlined in Chin (2010) by firstly, assessing the reliability and validity of the measurement model and secondly, assessing the validity and results of the structural model.The quality of the measurement models were assessed in terms of their unidimensionality, internal consistency, indicator reliability, convergent validity and discriminant validity (Henseler, *et al.*, 2009). Results of this analysis are presented in Table 5.

Individual item's reliability and unidimensionality were examined by factor loadings with all factor loadings greater than 0.50 and all significant at p <0.05 (Hulland, 1999). Internal consistency was assessed using Cronbach's Alpha (Cα) and composite reliability (CR) (Werts, *et al*., 1974). All CRs are above the minimum threshold value of 0.70 (ranging from 0.78 to 0.93) (Chin, 1998; Hair *et al.*, 2010), and Cα values are all above 0.60 (ranging from 0.63 to 0.91), demonstrating acceptable reliability (Nunnally, 1978). Average variance extracted (AVE) was calculated to assess the convergent and discriminant validity of the latent variables. All AVEs are greater than 0.50 (ranging from 0.55 to 0.74) which suggests convergent validity (Fornell and Larcker, 1981; Henseler *et al.*, 2009). Each AVE is greater than the squared correlation coefficient of its latent variable, which indicates that each variable shares more variance with its indicators than any other latent variable suggesting adequate discriminant validity (Fornell and Larcker, 1981). In addition, the cross loadings (analyzed but not shown in the paper) for each indicator are greater for their related latent variable than any other variable, providing further evidence of discriminant validity (Chin, 1998). Overall, these results suggest that each latent variable exhibits satisfactory reliability and validity.

Table 5: Inter-Construct Squared Correlations and Reliability Measures

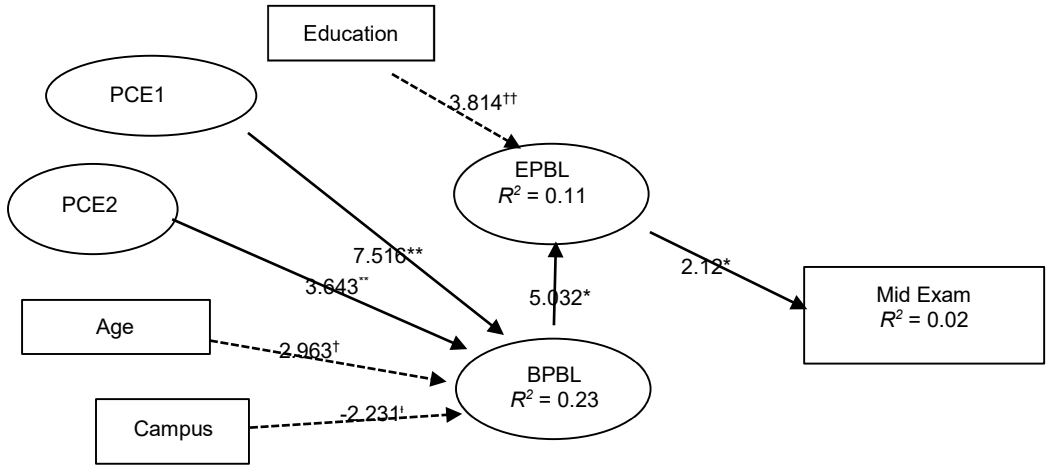
CA	CR	AVE	VARIABLES	PCE1	PAK	BPBL	EPBL	PCE2	MEX	FEX	AGE
0.63	0.78	0.55	PCE1	1.00	0.31**	0.37**	0.14*	0.16*	0.03	0.09	0.14*
0.81	0.84	0.67	PAK	0.09	1.00	0.13*	-0.01	0.08	0.06	0.06	-0.11
0.89	0.92	0.70	BPBL	0.14	0.02	1.00	0.13*	0.26**	0.04	0.06	0.19**
0.91	0.93	0.74	EPBL	0.02	0.00	0.02	1.00	0.17**	0.10	0.07	0.16**
			PCE2	0.02	0.01	0.07	0.03	1.00	-0.02	0.07	0.08
			MEX	0.00	0.00	0.00	0.01	0.00	1.00	0.64**	-0.02
			FEX	0.00	0.00	0.00	0.00	0.00	0.41	1.00	0.08
Descriptive Statistics:					Mean			3.67	30.84	45.98	21.33
					Minimum			1	2.80	0.00	16
					Maximum			7	40	75	42
					Standard deviation			1.76	7.45	14.72	5.11
					Skew			0.04	-1.26	-0.64	2.06

This table presents the results of the assessment of the quality of the measurement models in terms of their unidimensionality, internal consistency, indicator reliability, convergent validity and discriminant validity. Pearson's correlation coefficients are presented above the diagonal in the top panel and squared correlation coefficients are presented below the diagonal. ***$p < 0.10$, $p < 0.01$, *$p < 0.05$ (two-tailed). Where: Cα = Cronbach's Alpha; CR = composite reliability; AVE = average variance extracted; PCE1 = prior computer experience; PAK = prior accounting knowledge; BPBL = perceptions on blended learning at the beginning of semester; EPBL = perceptions on blended learning at the end of semester; PCE2 = prior use of blended learning program; MEX = mid-semester exam; FEX = final exam; AGE = age.

The structural model was used in testing the proposed relationships between the theoretical constructs as depicted in Figure 2. As the objective of PLS is to maximize the variance explained rather than model fit, R^2 is used to evaluate the structural model (Chin, 1998), as well as the Stone-Geisser test for predictive relevance Q^2 statistic (Stone, 1974; Geisser, 1975; Fornell and Cha, 1994). Results (Table 6) indicate that 23% of the variance in BPBL, 11% of EPBL, and 2% of a students' mid-semester exam mark is explained by the full model, whereas 24%, 13% and 1% of the variance in BPBL, EPBL and the final exam mark are explained respectively in the final exam model. The measure of the predictive ability of the full model, Stone-Geisser's Q^2 statistic is 0.75 (for both models). Chin (2010) argues that a Q^2 greater than 0.50 is indicative of a predictive model. The significant paths and variables are displayed in Figure 2 for the mid-semester exam model and Figure 3 for the final exam model. While the same path coefficients are significant in both the mid-semester exam and the final exam models, the t-statistics are slightly different between the two models. The results show a positive relationship between prior computer experience and BPBL in the mid semester exam model ($\beta = 0.367$, $t = 7.516$, $p < 0.01$) and the final exam model ($\beta = 0.386$, $t = 7.914$, $p < 0.01$), and prior use of an online program to aid learning for both mid semester and final exam models ($\beta = 0.186$, $t = 3.643$, $p < 0.01$; and $\beta = 0.186$, $t = 3.733$, $p < 0.01$, respectively), but no relationship

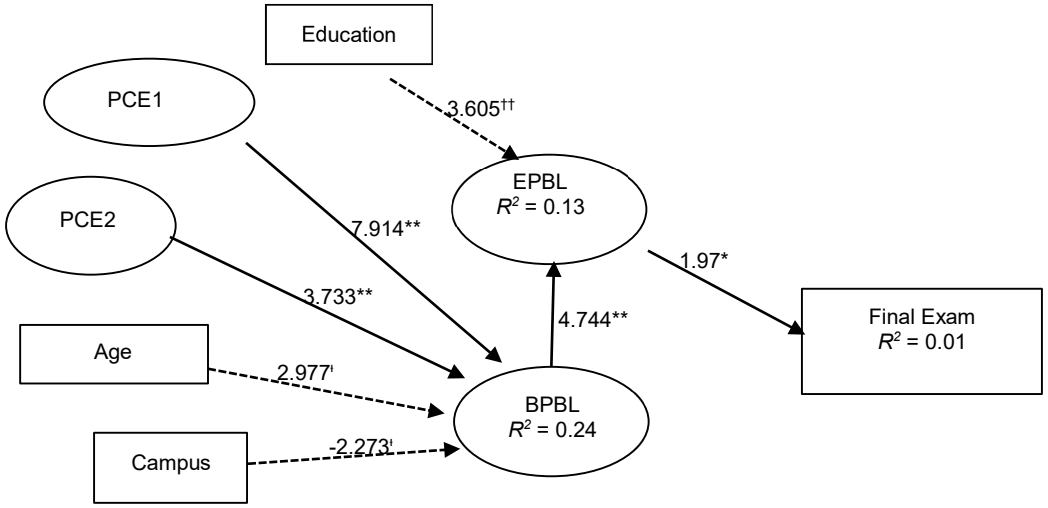
with EPBL. Prior accounting knowledge was found not to have an impact on BPBL and EPBL. Students' BPBL is positively related to their EBPL in the mid semester ($\beta = 0.270$, $t = 5.032$, $p < 0.01$) and final exam ($\beta = 0.270$, $t = 4.744$, $p < 0.01$). Additionally significant paths were noted suggesting that a students' perceptions on blended learning at the end of the semester is positively related to their performance in the mid semester ($\beta = 0.108$, $t = 2.124$, $p < 0.05$) and final exams ($\beta = 0.083$, $t = 1.965$, $p < 0.05$).

Figure 2: PLS Structural Model for Mid-Semester Exam (with Significant Paths)



*This figure depicts the structural model used in testing the proposed relationships between the theoretical constructs and the significant paths and variables for the mid-semester exam. ***p < 0.10, ** p < 0.01, * p < 0.05 (one-tailed); †† p < 0.01, † p < 0.05 (two-tailed). n = 314. A solid arrow signifies a hypothesized path; dashed arrow signifies a control variable path. Where: PCE1 = prior computer experience; PCE2 = prior use of blended learning program; BPBL = Perceptions on blended learning at the beginning of semester; EPBL = Perceptions on blended learning at the end of semester; AGE = age; CAMPUS = campus.*

Figure 3: PLS Structural Model for Final Exam (with Significant Paths)



*This figure depicts the structural model used in testing the proposed relationships between the theoretical constructs and the significant paths and variables for the final exam. ** p < 0.01, * p < 0.05 (one-tailed); †† p < 0.01, † p < 0.05 (two-tailed). n = 314. A solid arrow signifies a hypothesized path; dashed arrow signifies a control variable path. Where: PCE1 = prior computer experience; PCE2 = prior use of blended learning program; BPBL = Perceptions on blended learning at the beginning of semester; EPBL = Perceptions on blended learning at the end of semester; AGE = age; CAMPUS = campus. ***p< 0.10, ** p < 0.01, * p < 0.05 (one-tailed); †† p < 0.01, † p < 0.05 (two-tailed). n = 314. A solid arrow signifies a hypothesized path; dashed arrow signifies a control variable path. Where: PCE1 = prior computer experience; PCE2 = prior use of blended learning program; BPBL = Perceptions on blended learning at the beginning of semester; EPBL = Perceptions on blended learning at the end of semester; AGE = age; CAMPUS = campus; Education = previous highest education level achieved.*

Table 6: Significant Path Coefficients, *T*-Statistics and R^2

Paths:	Mid Semester Exam	Final Exam
PCE1 → BPBL	0.367	0.386
	(7.516)**	(7.914)**
PCE2 → BPBL	0.186	0.186
	(3.643)**	(3.733)**
BPBL → EPBL	0.270	0.270
	(5.032)**	(4.744)**
EPBL → Exam	0.108	0.083
	(2.124)*	(1.965)*
Age → BPBL	0.127	0.127
	(2.963)††	(2.977)††
Campus → BPBL	-0.110	-0.110
	(2.230) †	(2.273) †
Education → EPBL	0.171	0.171
	(3.814) ††	(3.605) ††
BPBL R^2	23.3%	24.1%
EPBL R^2	11.4%	12.9%
Exam R^2	2.1%	1.4%

This table 6 presents the results of the structural equation model and indicate that 23% of the variance in BPBL, 11% of EPBL, and 2% of a students' mid-semester exam mark is explained by the full model, whereas 24%, 13% and 1% of the variance in BPBL, EPBL and the final exam mark are explained respectively in the final exam model. n = 314. Each cell reports the path coefficient (t-value). *** *p < 0.10,* ** *p < 0.01,* * *p < 0.05 (one-tailed);* †† *p < 0.01,* † *p < 0.05 (two-tailed).*

CONCLUSION

The aim of this study is to use student-related variables to examine their impact on students' perception of the integration of face-to-face and blended learning experience and students' learning outcomes. This study uses survey questionnaires at the beginning and end of semester. The data analysis consists of (1) a paired sample *t*-test and (2) a partial least squares model to analyze the effect of student-related variables on student perceptions on the integration of blended learning at the beginning and end of semester and their learning outcomes, over the three year study period. The study found that there is no relationship between prior accounting knowledge and perceptions on blended learning. This finding fails to support research in the accounting literature showing that prior knowledge is an important learner attribute (Halabi, 2009). Further, it was found that although prior computer experience is positively related to perceptions on blended learning at the beginning of semester, it is not related to perceptions on blended learning at the end of semester. This is illustrated by the significant bivariate correlations between prior computer experience and BPBL and EPBL. As BPBL is also significantly correlated with EPBL, it is feasible that the shared variance between prior computer experience and BPBL and EPBL is consumed by the stronger relationship between prior computer experience and BPBL, thereby in a multivariate setting it has been found that prior computer experience is not related to EPBL.

The positive relationship between BPBL and EPBL suggests that students' perceptions at the outset are important in their view of the subject and the learning experience they will enjoy. The learning experience throughout the semester affects the students' perceptions on blended learning at the end of the semester and their perceived performance in both mid and final exams. The control variables of age and campus are positively related to BPBL. This supports previous findings relating to age, and can be seen to lend weight to the argument that younger students are more computer literate and see blended learning as a positive environment to assist their learning and improve their learning outcomes. Some inconsistency is noted in BPBL across campuses and requires further research. Students with a higher education levels are noted as having a more positive relationship with EBPL. It is suggested that their prior knowledge of the educational process influenced their perceptions and helping them embrace the learning environment in a positive way. It is also interesting that gender was not a significant control variable lending support to the changing gender balance in modern education. These findings have some implications for accounting educators involved in

teaching first year accounting course. Students rate their computer skills and accounting knowledge significantly higher after the integration of blended learning with the traditional face-to-face approach. Students perform better where they have a positive integration experience and learning outcome. Accounting educators can use this knowledge to motivate students to engage in blended learning and improve their learning outcome irrespective of their prior knowledge. Students who undertake a first year accounting subject can be assured of a positive outcome where they have a positive attitude to the blended learning process. This study is not without limitations. For example, the study was restricted to three years and conducted at two campuses of one university. The generalizability of the results beyond this sample therefore needs to be interpreted with care. In addition, it is recognized that the quantitative nature of the study may fail to capture the complexities of student learning and their perceptions on blended learning. Further research may incorporate both quantitative and qualitative (such as semi-structured interviews) into this kind of study and compare the results from first year accounting with other accounting subjects and other business subjects.

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