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Accounting students' perceptions of a Learning Management System

An international comparison

Ilias G. Basioudis
Finance & Accounting Group, Aston Business School, University of Aston, Birmingham, UK

Paul de Lange
Department of Accounting and Law, RMIT University, Melbourne, Australia

Themin Suwardy
Department of Accountancy, Singapore Management University, Singapore, and

Paul Wells
School of Business, Auckland University of Technology, Auckland, New Zealand

Abstract

Purpose – The purpose of this study is to investigate student perceptions of the design features included in an "off the shelf" Learning Management System (LMS) in teaching undergraduate accounting students.

Design/methodology/approach – Questionnaire responses from 846 accounting students studying in the UK, Australia and New Zealand provide international data to develop a model to explain student perception of the LMS.

Findings – The final model shows student satisfaction with the use of a LMS is positively associated with three variables: usefulness of lecture notes, bulletin boards and discussion forums, and other LMS tools. Further, the comparison of cultural differences of the three countries shows all students treat the provision of notes as a desirable attribute on a LMS. Findings also suggest that although students find the provision of materials over the LMS does not enhance student engagement in class, overall a comparison of the three countries shows all students treat the provision of notes as a desirable attribute of a LMS.

Research limitations/implications – Future research should collect ethnicity data to enable an analysis of cultural influence on student perceptions of the LMS.

Practical implications – As increased motivation to learn is found to contribute to improved achievement of learning outcomes, the study's findings have implications for faculty contemplating the adoption of a LMS in their courses. The findings specifically confirm that usefulness of lecture notes, use of bulletin/discussion boards, and other LMS tools are positively endorsed by students and hence increase their motivation to learn.

Originality/value – The current paper adds to the literature as the motivation to use and engage with LMSs by accounting students is not well understood.

Keywords United Kingdom, Australia, New Zealand, Students, Online learning, Internet, Accounting education, Learning management system, Student perceptions, Blended learning

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1. Introduction

The information explosion combined with quantum advances in technology are revolutionizing the way educators teach and students learn (Bryant and Hunton, 2000; Reeves, 1997). Universities around the world are making a significant resource commitment to the development of campus- or institution-wide learning platforms, using either one of the many off-the-shelf learning management systems (LMSs) or functionally similar in-house systems. LMSs leverage off the internet and information computer technology for disseminating and communicating information to facilitating learning and delivery of courses (Seale and Mence, 2001).

A LMS is defined by ASTD (2006, p. 2) as:

> [. . .] software that automates the administration of training. The LMS registers users, tracks courses in a catalogue, records data from learners and provides reports to management. A LMS is typically designed to handle courses by multiple publishers and providers. It usually does not include its own authoring capabilities; instead, it focuses on managing courses created by a variety of other sources.

Adding some clarity to this definition, Antonis *et al.* (2008, p. 509) note:

> LMSs have become popular since they incorporate a suite of functionalities addressed to learners, tutors and system administrators. These functionalities are designed, among other services, to create, deliver and manage learning content, track and report on learner activity and progress, enable synchronous and asynchronous collaboration/communication and provide centralised control and administration to tutors and system administrators. All such services are integrated within a robust, web-based environment effectively supporting many simultaneous users.

Information computer technology goes some way to bridge the gap between web-based education (LMS) and traditional education (Yacef, 2003). In this sense a LMS is a repository that typically offers learning tools such as lesson plans, course materials, discussion forum (or bulletin board), course assessments, chat rooms, and other tools.

The 2011 LMS report (Bersin, 2011) found that over US$1 billion was spent in the LMS market. This expenditure represented an increase of more than 50 per cent from its previous study in 2006 (Bersin, 2006). The report also noted that this growth in LMSs has been driven by the availability of proven technology, continued growth in e-learning, and recognition that LMSs provide both effective and efficient learning solutions. This demand is further stimulated by the increasing computer literacy of students.

Educators involved in distance learning were seen as the early adopters of LMS because the internet provided synergies for geographically separated student groups (Atkinson *et al.*, 1996; Liaw and Huang, 2000; Wade, 1999). Soon after, those involved in traditional face-to-face teaching in higher education identified the benefits of using a LMS to provide more flexible educational delivery systems which made the learning environment independent of both time and place (Arbaugh and Duray, 2002; O'Malley and McCraw, 1999). It was found that heightened motivation and extended mental effort lead to the achievement of improved learning outcomes (Bryant and Hunton, 2000; Kember, 1995; Koh and Koh, 1999; Kozma, 1991). It was further found that where flexible learning systems are able to involve students actively in the learning process, the students are more likely to adopt a deep approach to learning, thus leading to improved learning outcomes (Adler *et al.*, 2000; Booth *et al.*, 1999; Potter and Johnston, 2006). Moving from the theoretical to the practical perspective and given that accounting educators around the globe have complemented their teaching with the use of LMSs,

it is important to understand how student perceptions of LMSs might influence their level of engagement. Further, Bryant and Hunton (2000) have claimed that this issue has not been well examined in the accounting literature, thus providing the motivation for studies into student perceptions of LMSs in Australia (de Lange *et al.*, 2003), New Zealand (Wells *et al.*, 2008), and the UK (Basioudis and de Lange, 2009).

These previous studies present findings on student perceptions of LMSs from three different countries all with Anglo-Saxon origins. However, recent immigration trends and the globalisation of tertiary education have resulted in much more culturally and ethnically diverse educational settings in these countries. In the New Zealand institution, for example, more than 70 per cent of students enrolled in the participating classes were of non-European ethnicity. In Australia, statistics indicate that education was the fourth largest export earner in 2008-2009 (Australian Education International, 2009b). Of significance for this study is that accounting/commerce was ranked in the top three fields of education and as such there are significant numbers of non-resident students adding to the cultural diversity of the student cohort (Australian Education International, 2009a). Comparative studies are therefore important in aiding our understanding of cross-cultural perceptions.

Given this reported association between perceptions of an LMS, increased student motivation and engagement and the achievement of improved learning outcomes and Bryant and Hunton's (2000) claims that it is not possible to generalise on prior findings to date, this paper compares the findings of the Australian, New Zealand, and UK studies to ascertain whether these findings may be generalised.

This paper is structured as follows. The next section provides an examination of the literature on the use of LMSs in accounting education. An outline of the research design follows. Next the results are presented and followed by a discussion of the major findings and concluding remarks.

2. The use of LMSs in accounting education

The increased accessibility, availability and affordability of information computer technology have contributed to the adoption of LMSs in education. Most educational institutions have adopted an on-line learning platform, typically using one of the commercially available LMSs. Arbaugh and Duray (2002), O'Malley and McCraw (1999) and Siragusa (2002) suggest that increased competition between education providers and increased expectations from various stakeholders have placed greater pressure on education providers to explore cost effective alternative methods for programme and course delivery. While some institutions are using their LMS primarily as a cost-saving delivery mechanism, others have redesigned an entire course and pedagogy utilising the tools available within an LMS. For example, a LMS provides the opportunity for students to develop their range of "soft skills" such as writing, communication, and collaborative skills (Boyce, 1999).

While Butler and Mautz (1996) and Kozma (1991) endorse Clark's (1983) mere vehicles argument, where the use of the LMS is viewed as just another medium of delivery and is as such unable to enhance learning under any conditions (Bryant and Hunton, 2000), other researchers dispute this claim. Many institutions and instructors claim the potential benefits of LMSs include greater convenience, increased cost-savings, an enhanced learning experience (O'Leary, 2002), and increased motivation (de Lange *et al.*, 2003; Follows, 1999; Potter and Johnston, 2006). Studies of motivation in the educational

literature have resulted in models that suggest increased motivation and goal commitment contribute to improved student engagement which results in the achievement of enhanced learning outcomes (Kember, 1995; Tinto, 1993). Researchers who examined these relationships have noted student progress is to some degree explained by individual motivation for the task (Boulton-Lewis, 1995; Fransson, 1977; Keller, 1987).

Motivation may be stimulated by the use of LMSs as a result of improved access to learning materials, the provision of more timely feedback to students through on-line assessment (Breen *et al.*, 2003), and improved communication among students and between students and faculty through the availability of online bulletin boards, discussion forums and email facilities (Beard and Harper, 2002; Kang, 2001). Adler *et al.* (2000) and Booth *et al.* (1999) further argue that such adoption of this technology will facilitate deeper learning. Bryant and Hunton (2000), Kember (1995), Koh and Koh (1999), Potter and Johnston (2006) and Kozma (1991) also reported that improved learning resulted from heightened motivation and extended mental effort.

However, Love and Fry (2006) argue that how students connect with the LMS influences the derived benefits. They suggest that if students do not connect with the LMS it becomes merely a "safety net" for surface and dependent learning rather than a "springboard" for enhanced learning opportunities. Intuitive as it may appear, evidence of the pedagogical benefit of incorporating this new technology into the educational process appears inconclusive (Bonner, 1999; Brace-Govan and Clulow, 2000; Reeves, 1997; Smeaton and Keogh, 1999).

The study into student perceptions of LMS usefulness undertaken in Australia (de Lange *et al.*, 2003) found student satisfaction with the LMS was positively associated with the provision of lecture notes, bulletin boards, on-line assessment, chat rooms and video summaries. Similar studies were undertaken in both New Zealand and the UK. The New Zealand study (Wells *et al.*, 2008) found that while there was a high level of student satisfaction with the provision of a LMS to support their learning, this endorsement was directed less to interactive activities. Meanwhile, the UK study (Basioudis and de Lange, 2009) also found a high level of satisfaction with the LMS and this satisfaction was positively associated with both one-way communication and interactive activities.

This study contributes to the literature by providing a multi-institution, multi-geographical region perspective on student perceptions of LMSs in accounting education. It also enables us to identify the elements of a LMS which are strongly associated with student perceptions of the use and usefulness of the LMS from Australia, New Zealand, and the UK, and to identify how LMSs may contribute to increased motivation and hence improved student learning outcomes.

The above discussion leads to the following two research questions:

RQ1. Do perceptions of various design features in the LMS differ among students from different countries (i.e. Australia, New Zealand and the UK)?

RQ2. Are the various elements of a LMS associated with accounting students' perceptions of the usefulness of the LMS?

3. Method

Research setting

This study is differentiated from its predecessors in that it concentrates on three distinct accounting student cohorts located in Australia, UK, and New Zealand. Each university

offers a generic business programme with a major in accounting. The duration of each programme in Australia and New Zealand is three years full-time equivalent whilst the academic programme in the UK is four years incorporating a compulsory 12 months' industrial placement/experience. At the conclusion of each programme all those who successfully complete the accounting major (except in New Zealand where a further year of study is required) satisfy the academic requirements for membership of a professional accounting body in their country[1].

Students located in Australia and the UK are taking the introductory financial accounting module in their respective countries. The objectives of the module are to demonstrate to students how they can use accounting data to prepare financial statements and provide a useful source of information to aid financial decision making. The teaching delivery pattern of these introductory modules is based around large group lectures ($n \geq 100$) with small group tutorials ($n \leq 25$), in the ratio of one tutorial to a 2-hour lecture per week. These students have one assessment (test) contributing to their overall module mark, and one end of semester examination. In New Zealand students are enrolled in Accounting Information Systems and Auditing. This is a second year module which is mandatory for students seeking professional affiliation. The method of instruction and class organisation are similar to those in the USA. Most notably the New Zealand University follows a model where teaching is to small group classes of up to 30 students for three hours per week in face-to-face mode.

At all three universities, administrators actively encourage and support the use of LMSs[2] to enhance learning by enabling students to obtain resources, to facilitate increased interaction between students and with staff, and to assist students in developing independent learning capabilities and valuable information technology skills. Blackboard and WebCT are off-the-shelf complete LMSs and include built-in tools such as: course documents, announcements, bulletin boards, chat facilities, and quizzes. In all locations since 2001, all learning materials relating to these modules have been delivered on-line via the internet, the only print materials being the final examination and textbook.

In order to gauge student perceptions and hence the learning benefits of using a LMS when teaching accounting, a survey was conducted among undergraduate students who were studying accounting and who were exposed to a LMS. To facilitate an international comparison, the survey was conducted in three different countries at the same time approximately, namely New Zealand, Australia, and the UK. While these three countries are geographically separated they were all founded on West European culture and in the case of Australia and New Zealand both were former British colonies, suggesting cultural similarities. Nonetheless, the perception of homogeneity is somewhat blurred by the impact of international student enrolment patterns in an increasingly globalised market for students (Australian Education International, 2009b) and the implementation of more diverse immigration strategies in each of these countries. These initiatives have resulted in much more culturally and ethnically diverse educational settings in all three countries.

Survey instrument

The questionnaire for the study went through a decade of development and testing. It was originally developed by Suwardy and de Lange (1998). It was then subsequently modified and used in each of the studies undertaken by de Lange *et al.* (2003), Wells *et al.* (2008) and Basioudis and de Lange (2009).

The instrument seeks to measure student perceptions of the usefulness of the LMS in their accounting module. The instrument sought student responses in six areas:

(1) provision of lecture notes;
(2) bulletin boards;
(3) formative self-tests, i.e. self-grading quizzes that do not count towards final assessment;
(4) use of other LMS tools such as chat rooms;
(5) overall evaluation of the LMS; and
(6) demographic information.

These areas of investigation were examined on the basis that these were the functional attributes of Blackboard/WebCT used as a LMS.

In Sections (1)-(5) above, sample questions included: "the availability of lecture notes online assisted my understanding of the module materials being presented", "I prefer to do a formal test in a normal tutorial setting than doing an online quiz", "I prefer the lecture notes to be available on-line rather than being available in the library", and "the discussion forum assisted me in understanding the subject material". In these Sections (1-5) students indicated their preference on a five-point Likert scale anchored at 1 "strongly agree" to 5 "strongly disagree". In Section 6, respondents revealed their demographics and were able to make additional comments.

Procedure

The survey instrument was administered to all participants in their accounting module during formally scheduled class times towards the end of the semester, this typically occurred in weeks ten to 12 of the semester. In Australia and New Zealand data collection was in the month of June, while in the UK it was December. Data collection and analyses were completed between 2001 and 2005. To minimise response bias the surveys were administered by other faculty who were not formally engaged in teaching the survey groups and resulted in a response rate of over 90 per cent. The survey was administered at the end of the module to ensure respondents were familiar with the course content and mode of delivery incorporating a LMS.

Sample

The sample group for the study consisted of accounting students from New Zealand, Australia, and the UK. Demographic data shows that of the 825 responses, 56 per cent were female, 92 per cent were studying full-time and 80 per cent were under 20 years of age. Summary demographic data are presented in Table I.

The factor analysis employed in this study resulted in a five-factor solution. A composite score was calculated for each of the elements identified in the factor analysis, by summing the scores of questions associated with each factor. These factors were used in the regression analysis as the independent variables and were labelled as usefulness of lecture notes, student engagement with the module, the use of bulletin boards and discussion forums, and other LMS tools. The reliability of the measures for these variables was evaluated and found to be within generally agreed limits (Hair *et al.*, 1988), with Cronbach's α between 0.71 and 0.82. One factor, the self-test, was found to have a non-acceptable alpha coefficient, suggesting that the

	NZ	%	Australia	%	UK	%	Total
Gender of respondents							
Female	118	73	174	60	167	45	459
Male	*44*	27	*118*	40	*204*	55	*366*
Total	162		292		371		825
Mode of study							
Full-time	124	77	272	93	365	99	761
Part-time	37	23	21	7	5	1	63
Total	161		293		370		824
Age group							
Less than 20	70	43	240	82	352	95	662
21-30	72	44	44	15	15	4	131
31-39	16	10	10	3	4	1	30
Over 40	4	2	0	0	0	0	4
Total	162		294		371		827

Table I.
Summary of survey results

items which make up the factor do not measure the same thing. As a result, this factor was eliminated from further analysis.

4. Results

The results for the overall mean scores for each of the LMS component questions (variables), and the mean overall evaluation rating for the sample are shown in Table II. Students responding to this survey report a relatively high level of satisfaction in their evaluation of the LMS used in their university. On the scale of 1-5, where 1 is defined as "strongly agree", the mean score was 1.89. The four individual LMS components also attracted positive responses. All except one component are closer to neutral (around 3), the usefulness of lecture notes rated the highest (mean = 1.78), and overall evaluation rating the next highest (mean = 1.89). Student engagement with the module rated the lowest with a mean of 3.11. These descriptive results from Table II seem to imply that:

- the interactive LMS features are not highly valued by the students surveyed in the UK, Australia, and New Zealand; and
- the students mainly value LMS in its passive role as a "delivery vehicle".

Table III presents the correlation matrix for all variables entering the regression model. The results show that while all variables are positive and significantly associated with the level of students' overall evaluation, the highest correlation coefficients, which are for usefulness of lecture notes (0.279) and the use of bulletin boards and discussion forums (0.183), are relatively low. The even lower coefficient values for student engagement (0.089) and other LMS tools (0.084) suggest weak associations between the reported level of students' overall evaluation and student engagement with the module, and with other LMS tools, such as online chat and model answers. Although all other of the correlations, except one, are significant, magnitudes of these correlations are relatively small. In addition, conclusions drawn from our analysis should not be affected by multi-collinearity problems.

In addressing *RQ1*, the results reported in Table IV indicate differences among the UK, Australian, and New Zealand cohorts of students in their perceptions of LMS. Panel A of Table IV shows the differences in the composite scores for all the LMS

	Factor/questions making up the factors	Mean composite measure	Mean	SD	Median	Overall mean per factor
Factor	*Lecture notes usefulness*	4.49				1.78
Qn1	The availability of lecture notes resulted in my being less attentive in class		1.50	0.88	1.00	
Qn2	I prefer the lecture notes to be available online rather than being available in the library		2.12	1.26	2.00	
Factor	*Student engagement with module*	6.21				3.11
Qn1	The availability of lecture notes online assisted my understanding of the subject materials being presented		3.09	1.21	3.00	
Qn2	The availability of lecture notes resulted in my being less interested in attending lectures		3.14	1.22	3.00	
Factor	*Bulletin board*	7.73				2.59
Qn1	The bulletin board allows me to discuss subject materials with teaching staff and fellow students		2.54	0.99	3.00	
Qn2	The bulletin board assisted me in understanding the subjects materials		2.86	1.00	3.00	
Qn3	I wish other subjects would also provide an electronic bulletin board		2.38	0.92	2.00	
Factor	*Other VLE tools*	7.07				2.53
Qn1	The availability of model answers to tutorial/workshop questions assisted me in reviewing in the subject materials		2.51	1.32	2.00	
Qn2	I wish other subjects would also provide model answers to workshop questions		2.37	1.17	2.00	
Qn3	Did you make use of the model answers to workshop questions during the term		2.68	1.34	3.00	
Factor	*Evaluation*	5.64				1.89
Qn1	I believe greater integration of computers and technology in education will be beneficial		1.89	1.05	2.00	
Qn2	The LMS has made this subject (including its teaching staff and fellow students) more accessible		1.92	1.06	2.00	
Qn3	I wish other subjects would also use the LMS		1.86	1.06	2.00	

Note: $n = 846$

Table II.
Descriptive statistics for survey items

variables are statistically significant. In relation to the evaluation variable, the differences between the composite scores are relatively small which could be a reflection of cultural similarities among the three countries. To further investigate differences among countries, the mean ranks on each variable are compared between student cohorts of the three countries. The results in Panel B of Table IV suggest that there are significant differences in student responses in all questions comprising the factors between the UK and New Zealand, and between the UK and Australia (except for evaluation). In contrast, apart from the engagement and evaluation variables,

students' responses between New Zealand and Australia for the other three variables are similar. This result suggests that while the three countries share a similar culture heritage some differences have evolved through the composition of student cohorts in the three countries. One notable example includes the presence of the admission of fee paying international students in each location which may drive diversity in the perception of the LMS.

To address *RQ2*, a multiple regression model was tested to identify whether the four LMS variables are associated with the reported level of students' overall evaluation in a multivariate setting. The results, presented in Table V, indicate that except for student engagement with the module, the other three LMS variables are significantly and positively associated with the reported level of students' overall evaluation. The three LMS variables retain their significance after the additional demographic variables are

	1	2	3	4	5
1. Lecture notes usefulness	1.000	0.320*	0.271*	0.156*	0.279*
2. Student engagement with module		1.000	0.159*	−0.012	0.089*
3. Bulletin board			1.000	0.226*	0.183*
4. Other VLE tools				1.000	0.084*
5. Evaluation					1.000

Note: Significant at: *p*-value of less than the *1 per cent level (two-tailed); $n = 846$

Table III.
Pearson correlations for LMS variables

Panel A: overall differences

	Mean composite measure			*Kruskal-Wallis test*	
Variables	*NZ*	*Australia*	*UK*	χ^2	*p-value*
Lecture notes usefulness	2.970	2.904	6.432	445.006	<0.001
Student engagement with module	6.283	4.535	7.525	310.609	<0.001
Bulletin board	7.000	7.356	8.356	76.178	<0.001
Other LMS tools	5.160	7.937	7.195	209.794	<0.001
Evaluation	5.994	5.455	5.632	44.979	<0.001

Panel B: differences for paired countries

	NZ	*Australia*	*t-test*	*Mean difference p-value*
Usefulness	1.497	1.452	0.638	0.524
Engagement	3.163	2.267	9.58	<0.001
Bulletin board	2.356	2.452	−1.055	0.292
Other LMS tools	2.580	2.646	−0.655	0.513
Evaluation	2.012	1.818	2.107	0.036
	UK	*NZ*		
Usefulness	2.165	1.497	9.907	<0.001
Engagement	3.772	3.163	6.934	<0.001
Bulletin board	2.806	2.356	6.451	<0.001
Other LMS tools	2.403	2.580	−2.781	0.006
Evaluation	1.893	2.012	−2.118	0.035
	UK	*Australia*		
Usefulness	2.165	1.452	11.986	<0.001
Engagement	3.772	2.267	22.194	<0.001
Bulletin board	2.806	2.452	5.454	<0.001
Other LMS tools	2.403	2.646	−3.475	<0.001
Evaluation	1.893	1.818	0.899	0.369

Table IV.
Differences in LMS variables and evaluation between students from New Zealand, Australia, and the UK

	B	*t*-stat.	*p*-value	VIF
(Constant)	−1.675	−3.60	<0.001	
Lecture notes usefulness	0.285	7.29	<0.001	1.919
Student engagement with module	−0.036	−0.88	0.379	1.568
Bulletin board	0.081	2.54	0.011	1.201
Other LMS tools	0.706	21.64	<0.001	1.297
New Zealand	2.863	11.63	<0.001	1.788
Australia	0.266	1.08	0.279	2.613
Adjusted R^2	0.446			
F	112.4	(<0.0001)		
n	846			

Note: *p*-values are two-tailed

Table V.
Regression analysis of associations between students' overall evaluation of LMS and other LMS variables

introduced into the model[3]. The models were inspected for multicollinearity problems by examining the variance inflation factors (VIF). VIFs greater than ten are indicative of a severe multicollinearity problem, potentially inflating the estimated coefficients (Hair *et al.*, 1988). The highest VIF value is 2.613, indicating that problems with multicollinearity are unlikely.

The regression results suggest that both interactive variables (i.e. "bulletin/discussion boards") and one-way communication variables (i.e. "usefulness of lecture notes" and "provision of model answers" to tutorial questions) are important determinants of the reported level of students' overall evaluation. Surprisingly, the variable capturing the student engagement with the module is not significant, suggesting that although students find the availability of online lecture notes useful, the provision of such lecture notes online appeared to encourage students to be less attentive in class or not attend class at all thus discouraging their engagement with the class and the module overall. In contrast to the Australia country variable, the New Zealand country variable in the regression is positive and significant indicating that overall evaluation of LMS differs somewhat among the countries studied (the default comparison group is the UK).

5. Discussion and conclusion

The aim of this study was to examine the relation between various design features of a LMS and students' overall evaluation, and whether differences exist across international and cultural boundaries. The study tested the LMS design aspects in an accounting setting across three distinct student groups in three different countries. Individual country scores do vary on certain variables (such as lecture usefulness), nonetheless, these results are skewed in the same direction thereby guiding the researchers to homogenous conclusions.

The findings presented here suggest that the students in Australia, New Zealand, and the UK provide a positive overall evaluation of the LMS in their respective modules. Of the three factors identified as contributing to the positive, overall student's evaluation, one which could be described as interactive and hence facilitated deeper learning, is "bulletin/discussion boards". The provision of lecture notes as captured by the "student engagement with module" variable in our analysis, and the "provision of model answers" to tutorial questions, on the other hand, represent one-way

communication where students treat the LMS merely as an information repository. Another interesting finding is that while students believe the online provision of lectures notes useful, this online provision appears to be disengaging for some.

The statistical inferences of the responses identified in the previous sections, when aggregated, suggest that students support the shift in pedagogy to include the use of a LMS in accounting education. This overall observation is largely consistent with individual studies of student evaluations of a LMS (Basioudis and de Lange, 2009; Wells *et al.*, 2008; de Lange *et al.*, 2003; Suwardy and de Lange, 1998). This aggregated analysis has reported a relatively high level of support for the use of LMSs and in doing so has created further challenges to educators and institutions who want to remain at the cutting edge of technology, such as exploiting the use of new LMS features, e.g. "m-learning" (mobile learning facilitated by the use of smart phones).

Despite these positive responses in support of the LMS, sceptical observers could argue that changes in the expectation of students and broader society rather than pedagogical benefits have influenced student satisfaction with the LMS platform. For example, some students may be using the LMS as a "safety net" to make up for absence from class rather than as a "springboard" to enhance learning experiences. If this is so, then those institutions who choose not to implement LMSs and technology more generally, risk becoming penalised in their student evaluations. In addition, consistency of responses from students in the three countries from a diverse range of ethnic categories supports the conclusion that these findings may be generalised.

This study adds to the body of knowledge with regard to the generalisability of student perceptions about LMS platforms. Specifically, students from a large sample in three countries reported similar perceptions with regard to the use of a LMS in accounting education. This finding alone should be of interest to educators generally and accounting educators specifically as institutions try to come to terms with an increasingly diverse student mix. Changes in the student mix leads to diversity of cohorts and this may be a product of many factors. As an example, many university departments create complex course offerings in response to an institutional environment in which there is continued pressure to geographically replicate course provision in distant locations around the globe in order to increase revenue streams.

For those interested in the export of education, the findings from this study suggest that the design features most satisfying for these international cohorts relate to usefulness of lecture notes, the use of bulletin boards and discussion forums, and other LMS tools as they are all positively related to the students' overall evaluation of the LMS.

6. Limitations and future research

The sample used in this study came from students studying a single module in accounting at three different business schools from three different countries (Australia, New Zealand, and the UK). While these three countries do not reflect the entire ethnic and cultural diversity of the world, the internationalisation of tertiary education and the multicultural nature of communities have contributed to the diversity of participants in this project. Regrettably, ethnicity data was not collected from participants and hence we cannot provide full details of the participant ethnic mix. Further, as two different LMS were used in the education of students in the three countries, this may in itself produce differences in student perceptions of the LMS.

Acting against this concern is the reality that the functionalities of LMSs as competing products are similar and have not experienced wholesale changes throughout the various "upgrades" of the software (Bersin, 2006). These limitations may to some degree reduce the generalisability of the findings to other universities and institutions, although similar patterns are reported in this sample. Moreover, there may be scope for improving the power of the empirical model by adding other potential factors to those identified in this study with the aim of providing a holistic representation of the factors that motivate students' learning.

Opportunities for further research stem from the fact that this is a cross-sectional study and, as such, researchers could attempt to undertake a longitudinal study which would contribute to greater understanding of the student learning. Finally, there have been few systematic studies in this area of educational research, and there is scope for researchers to investigate similar issues and capture the views of their students in other accounting modules. Such investigations may add to our stock of knowledge with regards to the implementing a LMS within the accounting discipline.

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Notes

1. Professional affiliation is generally accepted as a necessary pre-requisite for a career in accounting. Graduates from New Zealand are eligible to join the Institute of Chartered Accountants New Zealand while graduates from the UK and Australia have similar professional organisations. It should be noted that some domestic professional bodies share reciprocal rights in other countries.
2. In the UK and New Zealand, Blackboard was used as the LMS, while in Australia students used WebCT.
3. As an additional analysis we have included a dummy variable to capture students' two different year levels in our data; the results remain qualitatively the same.

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About the authors

Ilias G. Basioudis (BSc, MSc, PhD, FAIA, FHEA,) is Associate Professor in Financial Accounting & Auditing at Aston Business School, Aston University, UK. He is Associate Professor of Financial Accounting & Auditing in the Finance & Accounting Group at Aston Business School and Chairman of the Auditing Special Interest Group of the British Accounting & Finance Association. Ilias G. Basioudis is the corresponding author and can be contacted at: I.g.basioudis@aston.ac.uk

Professor Paul de Lange (B.Ed., Grad Dip Acc., M.Bus Acc., PhD, CPA, IPA) is currently a Professor and Deputy Head, Research, in the Department of Accounting at RMIT University.

Themin Suwardy (B.Bus (Acc) (Hons), BComp, PhD, FCPA Australia, FCPA Singapore) is Associate Professor of Accounting (Practice) and is the Associate Dean (Curriculum and Teaching) and Master of Professional Accounting (MPA) Programme Director at School of Accountancy, Singapore Management University.

Paul Wells (PhD, NZICA) is a Senior Lecturer in the School of Business at Auckland University of Technology.