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Why don't accounting students like AIS?

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Abstract

Purpose – The demand for Accounting Information Systems (AIS) knowledge has increased exponentially over the past two decades, but studying AIS has not proved easy for many accounting students. The aim of the study is to understand the challenges accounting students face in studying AIS through investigation of the factors which may be contributing to their difficulties.

Design/methodology/approach – A survey instrument was developed for this study, and data were gathered from 618 students enrolled in AIS courses, 95 per cent of whom were accounting students. The data were analysed using Structural Equation Modelling (SEM) with the Partial Least Squares (PLS) technique.

Findings – The results show that course structure, pre-existing knowledge of Information Systems (IS), assessment of critical thinking, teaching style and the availability of academic assistance to students all have a significant influence on students' learning experience in AIS courses.

Research limitations/implications – The study has important implications for AIS educators through its identification and analysis of possible difficulties faced by students. It is hoped that remedial measures to enhance this experience will be explored and implemented.

Practical implications – The study was conducted in one university context, so caution should be exercised in generalising the results. Future research could further validate, question, or extend the findings in multiple tertiary education institutions, in various countries.

Originality/value – This is one of the first studies to introduce scales to measure students' perceptions and experiences in AIS courses. It is hoped that this paper will initiate a discussion that leads to a better understanding of students' perceptions of challenges, and thus make AIS learning a richer and more enjoyable experience for students.

Keywords Accounting information, Information systems, Learning, Students

Paper type Research paper

1. Introduction

Ongoing developments in information systems (IS) and its business applications have necessitated the incorporation of IS concepts into accounting education (Borthick, 1996). These developments, along with the increasingly global nature of business, have meant that accounting graduates need to have broad skills if they intend to pursue a career in the accounting profession (Kavanagh and Drennan, 2008). There is also a growing interest in Accounting Information Systems (AIS) expertise in the workforce (Dillon and Kruck, 2008). Consequently, accounting education is changing rapidly, prompting regular reviews of how best to present IS theory to accounting students (Potter and Johnston, 2006). This is proving to be a major challenge.

Improving the quality of students' learning experiences and outcomes has always been a focus of research in education and psychology (Gravoso *et al.*, 2002), but seems to have received little attention in AIS research. To address this gap, this paper aims to investigate the challenges faced by accounting students when studying AIS. These systems are interdisciplinary in nature, spanning the fields of both accounting and IS.

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Unlike traditional accounting education – which often incorporates financial accounting, management accounting and taxation – AIS is a recent and relatively non-standardised component of the curriculum (Barkman, 1998; Borthick, 1996). There is also little authoritative guidance from international accounting bodies regarding this area of the curriculum (Chayeb and Best, 2005). Various approaches to teaching AIS have been adopted at different institutions; for instance, some academics focus on system knowledge such as programming, databases and system design and development, while others focus on internal controls and business processes as prerequisites for auditing subjects (Barkman, 1998).

This study considers two undergraduate AIS courses offered as part of the accounting degree at a large Australian university. The study involves students drawn from both these AIS courses, which are essentially equivalent in that they use the same textbook and cover many of the same topics. Students are required to complete only one of the two courses. The main topic areas covered over a 13-week semester are IS fundamentals, businesses processes, controls, ethics, systems development methodologies, and documentation. Both courses encourage critical deliberation and reflection, as opposed to a replication of content through rote learning.

The next sections present the background to the study, followed by a review of relevant literature. Research hypotheses are then formulated, and a research model presented. The results are then analysed and discussed.

2. Previous research and hypotheses development

Drawing on a review of relevant literature, and the authors' own experiences in teaching AIS subjects (Young and Aoun, 2008), factors with a possible bearing on students' learning experiences in AIS subjects were identified for investigation. Because the study is an investigation of the perceived overall learning experience from a students' vantage point, a pilot study was then conducted using 120 AIS students and incorporating 100 questions for measuring students' learning experiences in AIS courses. The collected data were analysed using factor analysis, and reliability testing was done using the statistical software SPSS Version 13. Structural Equation Modelling (SEM) and the Partial Least Squares (PLS) technique were used to test the validity and reliability of the measurement model. The original 100 questions were then reduced to 51, and eight factors emerged as having a possibly significant impact on students' learning experiences, namely: teaching style, assistance to students, transition to university, assessment, English language proficiency, appreciation of AIS, course structure, and pre-existing IS knowledge. The factors and related hypotheses are discussed in the following.

2.1 Teaching styles

Australia is the world's third largest exporter of higher education, with its clientele mainly coming from a limited number of South East Asian countries (Harman, 2004). The majority of students enrolled in AIS subjects are international students, mostly from South East Asia. The literature mentions several difficulties commonly faced by international students when studying at educational institutions in western countries, as students' preferences regarding teaching styles may depend on factors such as background experience, nationality and the institutions they have attended (Marriott, 2002).

Difficulties that South East Asian students often experience with western styles of education are frequently mentioned in the literature. For instance, Ladd and Ruby (1999) assert that Chinese cultural values are based on the perception that the teacher is the ultimate authority, hence disagreement is discouraged. When a western system is suddenly encountered – one where differences of opinion and debate are accepted and often encouraged, and where there are no clear right and wrong answers – it can create an uncertain and stressful environment for some students. Some researchers recommend that instructors should investigate international students' learning styles, and gradually introduce western teaching styles to the classroom. Some international students – for example, those from China – may also expect a traditional teacher-centred approach, where the focus is on teachers passing their knowledge on to students. This approach may lead to poor development of students' learning abilities and skills when those students are transferred to a western context (Lin and Deng, 1992; Xiao and Dyson, 1999). A teacher-centred approach does not encourage interaction between teachers and students in the classroom, and rarely uses small-group tutorials, student presentations, or group coursework assignments. We therefore considered it worthwhile to investigate whether our AIS students commonly encounter difficulties owing to a lack of familiarity with teaching styles and methods used in AIS subjects. Thus a hypothesis adopted for this study is that:

H1. Familiarity with the teaching style has a positive effect on students' overall learning experiences in AIS courses.

2.2 Assistance to students

In Australia the university environment often seeks to provide students with various forms of assistance, including academic help and counselling (Rosenthal *et al.*, 2007). The majority of AIS students experiencing academic difficulties have a low grade point average (GPA), indicating poor performance in other courses as well as AIS. Several support services have been put in place to assist weaker students such as these. These services are usually free of charge and include the provision of peer-assisted learning sessions, consultations with teaching staff, university academic study support, and online support materials.

Various support mechanisms have been implemented in the faculty in which this study is based, including individual staff consultations being made available for students on at least four days a week. Students are also encouraged to seek university support on study techniques, writing, referencing, and researching. Moreover, AIS students have the option of participating in voluntary peer-assisted learning sessions run by students who have excelled in AIS courses. Many previous studies indicate that students learn effectively from peers by collaboratively studying and assessing other students' work, and that this kind of learning is further enhanced when assessment methods include feedback from teachers about products and processes (see, for example, Bloxham and West, 2004; Van Den Berg *et al.*, 2006). The absence of adequate peer support and assistance services in a university environment have been found to have a negative effect on students' satisfaction, and ultimately on their academic performance (Chambel and Curral, 2005). Chinese students, in particular, tend to respond favourably to social support structures, which encourage social networking (Ye, 2006). Consequently, a further hypothesis of this research is that:

H2. Assistance to students has a positive impact on students' overall learning experiences in AIS courses.

2.3 Transition to university

In the student group under discussion, the majority of those who experienced difficulties appeared to be students who had completed their first year of accounting studies not at the university itself but in affiliated colleges catering mainly to international students. Having entered the university from these colleges in their second year of study, they then had to adjust to larger class sizes and a more independent style of learning. Thompson and Geren (2002) discuss the transition difficulties that students face when moving to academia. They suggest that during this transition the student may experience problems in adopting the "cognitive behavioural modifications" required at university, hence preventing them from discovering "how to look at themselves as learners, to think about how they learn, to set goals, to actively apply strategies, and to monitor themselves as they advance towards a goal" (Thompson and Geren, 2002, p. 402). This problem is aggravated by the fact that students nowadays are often less prepared for university work than their predecessors, and tend to spend fewer hours studying (Nonis and Hudson, 2006). A hypothesis of this study is that:

H3. The later the transition to university, the more negative the impact will be on students' overall learning experiences in AIS courses.

2.4 Assessment

High-quality learning outcomes such as analytical and critical thinking skills may not be achieved unless students are encouraged to adopt deep approaches to learning. Deep learning approaches are characterised by a personal commitment to learning, an interest in the subject, and the student's intention to understand and seek meaning in the materials being studied (Hall *et al.*, 2004; You and Jia, 2007). AIS students are encouraged to adopt a deep learning approach by developing their skills in contextual interpretation, recommendation, and justification of case studies. To improve students' critical thinking skills and highlight the courses' relevance to their later careers, case studies are used to train students in applying their knowledge in real or hypothetical contexts (Ramsden, 2003). Most conceptual topics in AIS subjects require a substantial degree of critical analysis and deliberation, as there are often no straightforward right or wrong answers. This makes it important for students to develop the ability to make recommendations and justify them. This also sets AIS courses apart from many other accounting courses, which are usually much more structured. Weaker students are generally able to master the more structured components of AIS courses – such as definitions and characteristics, where memorisation is the main requirement – but find it difficult to apply what they have learnt to case-study scenarios where they are required to explain their rationale, recommend courses of action, and provide justifications. Thus a hypothesis adopted for this study is that:

H4. Poor critical thinking skills will have a negative impact on students' overall learning experience in AIS courses.

2.5 English language proficiency

Although the International English Language Testing System (IELTS) (which is similar to the Test of English as a Foreign Language (TOFEL)) is a requirement for entering Australian universities, many international students in AIS subjects

demonstrate a poor command of English, particularly when it comes to critical writing skills. Abbott and Doucouliagos (2009) make the obvious point that international students generally have poorer English communication skills than domestic students. A large component of continuing assessments in AIS as well as the final exam are based on case studies, where students are expected to communicate and apply their knowledge of theoretical concepts. Weaker students often face serious difficulties in dealing with such material, particularly if they also have poor English language skills. Some researchers suggest that poor writing skills among accounting students in general are also putting those students at risk of failing (Webb *et al.*, 1995).

Other researchers have argued that the current practice of expecting all students to have reasonable proficiency in English could be creating discriminatory standards and inherent inequalities (Friedenberg, 2002). Suggestions on how to rectify this problem range from improving students' generic skills, including their English language proficiency (Nathan and Dunn, 1997), to introducing multilingual modules and facilities. (The latter suggestion seems highly impractical given our students' diverse linguistic backgrounds. A focus on English language proficiency seems more reasonable.)

Considerations such as the previously mentioned, led us to hypothesise that:

H5. Poor English language proficiency will have a negative impact on students' overall learning experiences in AIS courses.

2.6 Appreciation of AIS

Instructors in the AIS courses under study are often told by students that they cannot see the relevance of AIS subjects for their future accounting careers. Although technology is essential for most accounting tasks, many students, especially those with no industry work experience, have difficulty seeing its relevance. This problem seems to be particularly pronounced among South East Asian students, who are often motivated by a focus on their future careers (Kember, 2000).

AIS courses offer students the chance of using accounting software (such as QuickBooks and MYOB) as a means of acquiring experience in using this kind of technology, and to make a connection between the theoretical concepts discussed in class and their practical utility. Although students often view this training as useful, weaker students seem much less inclined to accept this. This often leads to their not attending non-compulsory classes (such as lectures), not participating in voluntary support activities (including peer assisted learning), making only minimal contributions to class discussions (for example, in tutorials) and performing poorly on assignments – all of this despite attempts by instructors to draw their attention to the importance of AIS for a career in accounting. Weaker students tend to take a more passive and less engaged approach to their learning, and, anecdotally, indicate a lack of appreciation of AIS concepts. We therefore offer the further hypothesis that:

H6. An appreciation of the relevance of AIS to an accounting career will have a positive impact on a student's overall learning experience in AIS courses.

2.7 Course structure

Ramsden (2003) argues that a good course structure must incorporate an educationally justifiable order of topics, and that the justification and coherence of these topics must

be visible from the learner's point of view and not just from the viewpoint of an expert. He also suggests that this evidently logical structure could be enriched and made more relevant by the inclusion of real-world problems and cases for students. It has also been argued that coherent learning objectives in the design of a course are likely to assist students in synthesising what they learn into a coherent and meaningful whole (Aggarwal, 2003). With these considerations in mind, it seems reasonable to conclude that the development of an AIS curriculum that is well structured and coherent from the student's perspective is important for ensuring a favourable learning experience for students.

AIS is undoubtedly an area of study with a distinctly different content from traditional courses in accounting, even though it is an important part of any accounting curriculum. Further difficulties emanate from the fact that AIS components are relatively recent and non-standardised (Barkman, 1998; Borthick, 1996), and international accounting bodies have offered very little guidance for designing an effective AIS curriculum (Chayeb and Best, 2005). Consequently, there is no clear indication of what topics should be covered, the extent of that coverage, and the sequence of topics. For instance, Fordham (2005) asserts that an obvious challenge to implementing AIS programs is choosing which AIS topics and content should to be incorporated into the curriculum. These considerations lead us to hypothesise that:

H7. A coherent course structure, from the students' perspective, has a positive impact on students' overall learning experience in AIS courses.

2.8 Pre-existing knowledge of information systems (IS)

Students' conceptions of learning are often shaped by their prior learning experiences and knowledge. The high degree of heterogeneity of students' background knowledge of IS and the rapidly changing nature of the computing environment are two challenges affecting AIS education (Borthick, 1996). In the absence of the relative "unanimity" and stability that prevails in traditional accounting courses, AIS educators find themselves undertaking substantial curriculum development to prepare students for careers in which accounting and technology are intertwined. The debate regarding the extent to which IS should be incorporated into AIS subjects continues, but Borthick (1996) insists that it is unrealistic to think that acquiring AIS competencies can be delayed until the final year of accounting education. He points out that one year is simply not enough time for students to develop information systems expertise.

In the accounting curriculum that is the subject of the present study, a prerequisite for entry into AIS courses in the second year of enrolment used to be an "introduction to information systems" course taken in first year. But this requirement has recently been dropped, with the result that many students start their AIS studies with no pre-existing knowledge of IS (although some can still choose to do this introductory course as an elective). Given the previous considerations, we hypothesise that:

H8. The possession of an introductory background knowledge of IS will have a positive impact on students' overall learning experiences in AIS courses.

3. Research model

The preceding review and hypotheses provide the background for the research model developed for this study. The model is set out in Figure 1. To ensure the accuracy of results, some factors that may have affected students' overall learning experiences were included as control variables. As already mentioned, the data collection was conducted using students enrolled in two equivalent AIS courses in an accounting department. This required that the subject type be controlled for. Other factors, which were controlled for were:

- type of student (international or domestic);
- English language (native speaker or non-native speaker);
- number of attempts in a subject (first attempt or repeating); and
- transfer students (whether a student transferred from an affiliated institution or had direct entry).

4. Methodology

In the second semester of 2008, during the last week of lectures, about 1,200 survey questionnaires were distributed to students enrolled in the AIS subjects under study; participants were allowed class time to complete their answers. All participants were informed that participation was voluntary, that all the responses were anonymous, and that the study had been approved by the university's human ethics committee. We received 618 completed questionnaires. The first 13 questions collected demographic data – for example, whether the student was local or international, whether English was their first language, what their study pattern was, and so on. The remaining 38

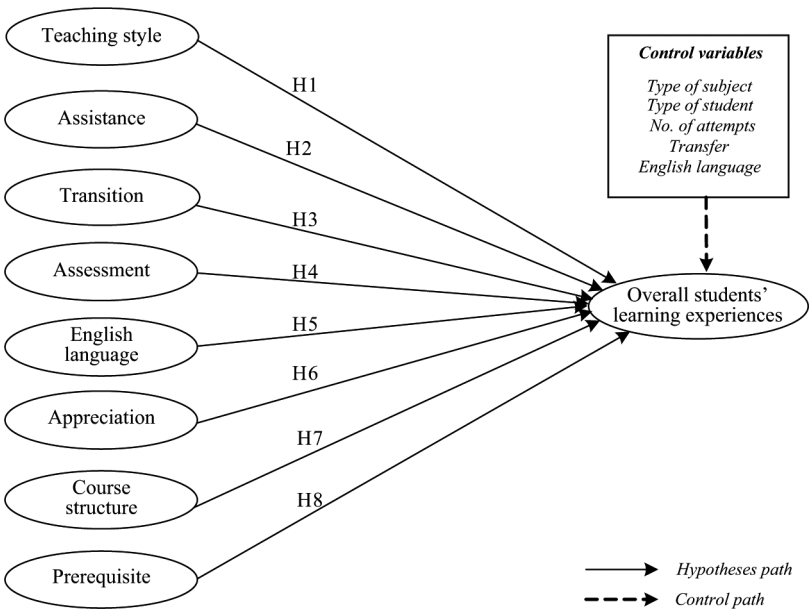


Figure 1.
Research model

questions asked about students' perceptions regarding each of the factors relating to our eight hypotheses (*H1* to *H8*), and about their overall learning experience in AIS courses. These perceptions were measured using a five-point Likert scale with 1 meaning "strongly disagree" and 5 meaning "strongly agree". The demographics of the respondents are summarised in Table I.

The Structural Equation Modelling (SEM) method with Partial Least Squares technique (PLS) were selected for data analysis. SEM is a complex statistical approach for testing hypotheses about relations among observed and latent variables. Chin (1998) asserts that SEM has advantages over first-generation techniques – such as principal components analysis, factor analysis and multiple regression methods – because it offers greater flexibility for researchers for interplay between theory and data. PLS is a technique associated with SEM, and provides a superior estimation to the covariance-based method in terms of avoiding inadmissible solution and factor indeterminacy. Furthermore, PLS can be particularly useful for the analysis of a complex model with small sample sizes compared to a large number of independent variables. The research model was operationalised and analysed using PLS-Graph Version 3.0. The results of the PLS analysis are presented in the next section.

Questions		Frequency	Percentage
When did you commence your studies at this university?	Before 2006	17	2.8
	2006	61	9.9
	2007	195	31.6
	2008	345	55.8
Did you transfer from an affiliated college or a Technical and Further Education (TAFE) college?	Affiliated X	421	68.1
	TAFE	26	4.2
	Other institutions	40	6.4
	Non-transfer	131	21.2
Are you a local or international student?	Local	98	15.9
	International	520	84.1
What is your gender?	Male	262	42.4
	Female	356	57.6
Where did you complete your high school studies?	Australia	150	24.3
	New Zealand	4	0.6
	Asia	449	72.7
	Africa	3	0.5
	North America	3	0.5
	Central/South America	1	0.2
	Europe	7	1.1
	Missing value	1	0.2
What is your study pattern?	Full-time	595	96.3
	Part-time	23	3.7
This is my __attempt of this (or an equivalent) course	First	488	79
	Second	117	18.0
	Third	3	2.1
Which degree program are you pursuing?	Accounting	588	95.1
	Non-accounting	30	4.9

Table I. Respondents' demographic data

5. Analysis of results

5.1 Measurement model

To ensure the accuracy of the structural model analysis, the validity and reliability of the developed scale needed to be tested. Table II presents the results obtained via a "bootstrapping" procedure, which is a re-sampling technique used to examine the stability of estimates. It includes PLS loading, *t*-statistics, significance level, composite reliability and average variance extracted (AVE). The results suggest that our measurement model demonstrates sufficient discriminant validity and internal

Constructs	Items	PLS loadings	*t*-statistics	Significance level	Composite reliability	AVE
Students' overall learning experience	Overall1	0.8283	59.7588	0.01	0.930	0.726
	Overall2	0.8612	76.6165	0.01		
	Overall3	0.8475	64.3706	0.01		
	Overall4	0.8563	72.0550	0.01		
	Overall5	0.8677	73.9025	0.01		
Teaching style	Teach1	0.8338	42.7591	0.01	0.902	0.696
	Teach2	0.8849	79.9279	0.01		
	Teach3	0.7866	29.7275	0.01		
	Teach4	0.8295	53.9198	0.01		
Assistance	Assit1	0.8226	33.7020	0.01	0.896	0.684
	Assit2	0.8393	44.0903	0.01		
	Assit3	0.8668	47.6936	0.01		
	Assit4	0.7763	24.5012	0.01		
Transition	Transition1	0.9774	6.5444	0.01	0.958	0.850
	Transition2	0.8664	5.0420	0.01		
	Transition3	0.9720	6.4595	0.01		
	Transition4	0.8664	5.0420	0.01		
Assessment	Assessment1	0.8627	5.1893	0.01	0.927	0.718
	Assessment2	0.9012	4.0285	0.01		
	Assessment3	0.8506	4.1628	0.01		
	Assessment4	0.8268	4.2752	0.01		
	Assessment5	0.7907	3.5601	0.01		
English language	Comm1	0.9009	6.8993	0.01	0.945	0.812
	Comm2	0.9101	7.0704	0.01		
	Comm3	0.9149	6.9881	0.01		
	Comm4	0.8780	5.6114	0.01		
Appreciation of AIS	Perception1	0.8967	69.2877	0.01	0.946	0.815
	Perception2	0.9218	91.8785	0.01		
	Perception3	0.9287	75.4401	0.01		
	Perception4	0.8621	32.5519	0.01		
Pre-existing knowledge		0.9078	70.5846	0.01	0.954	0.839
	Pre-existing1					
	Pre-existing2	0.9131	90.9195	0.01		
	Pre-existing3	0.9112	92.4693	0.01		
	Pre-existing4	0.9310	136.2202	0.01		
Course structure	Structure1	0.8055	35.4933	0.01	0.882	0.651
	Structure2	0.8302	58.8328	0.01		
	Structure3	0.7829	31.6077	0.01		
	Structure4	0.8084	34.8534	0.01		

Table II.
Statistical outcomes for measurement model

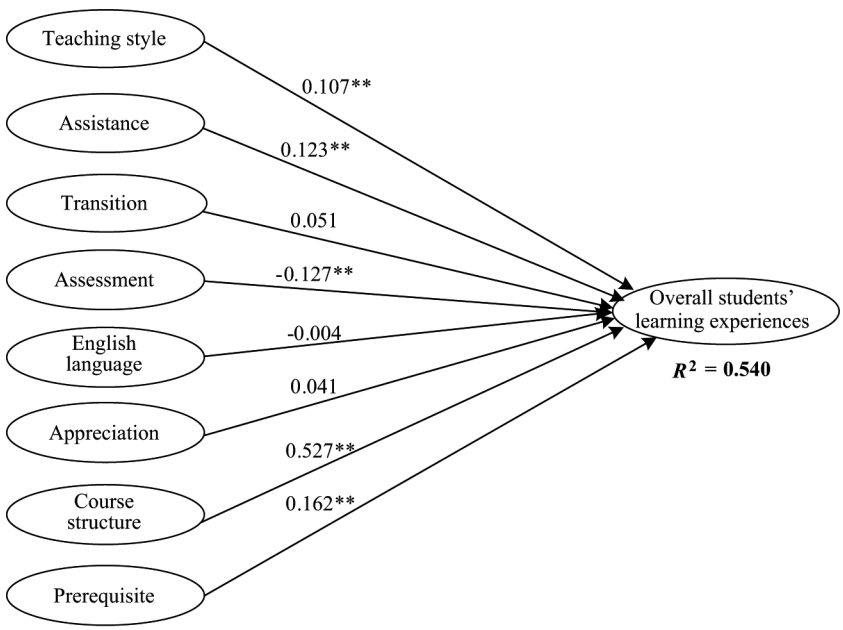
consistency. Chin (1998) suggests that the PLS loading should be greater than 0.707. All the reflective scales demonstrated acceptable performance above the minimum value of composite reliability, the minimum being 0.7. The standard for reliability also dictates that the AVE scales should exceed 0.5, that is, "50 per cent or more variance of the indicators should be accounted for" (Chin, 1998, p. 321). It is evident that all the scales performed acceptably on the previous standards. An overview of the results of the structural model is presented in the following.

5.2 Structural model

Figure 2 presents the results of the structural model generated by the PLS graph. The predictiveness of the model can be assessed by the R^2 of the dependent constructs. The results show that R^2 of the overall students' learning experiences is 0.540, which indicates that all the latent variables accounted for 54 per cent of the variance of the construct.

The significance-level results of the study support *H1*, *H2*, *H4*, *H7* and *H8*, but refute *H3*, *H5* and *H6*. Table III presents, in statistical terms, the outcomes of the examination of the hypotheses. The statistics obtained through the bootstrapping procedure (that is, the actual effect, path coefficient, observed *t*-statistics and significance level) are reported in the following.

To sum up these findings, among the variables the "course structure" factor emerged as contributing the most to students' overall learning experiences (0.527 of the path coefficient), followed by "pre-existing knowledge" (0.162), "assessment" (− 0.127), "assistance" (0.123) and "teaching style" (0.107). This indicates that teaching style,



Note: ** = significance at 0.01

Figure 2.
Structural model results

Table III.
Summary of path coefficient test results

Constructs	Actual effect	Path coefficient	Observed *t*-statistics	Significance level
Students' overall learning experience				
Teaching style	+	0.107	3.4227	0.01
Assistance	+	0.123	3.8769	0.01
Transition	+	0.051	1.4008	Not significant
Assessment	−	0.127	2.1135	0.01
English language	−	0.004	0.0942	Not significant
Appreciation of AIS	+	0.041	1.0766	Not significant
Course structure	+	0.527	4.5731	0.01
Prerequisite	+	0.162	13.6523	0.01

assistance to students, course structure and a pre-existing knowledge of IS have a positive influence on students' overall learning experiences in AIS subjects. The results disprove *H3*, *H5* and *H6*; that is, transition to university, communication skill and appreciation of the relevance of AIS for a future career do not have a statistically significant influence on students' overall learning experiences.

Conversely, the critical thinking assessment task had a negative influence on students' learning experiences. This implies that the more difficulty students have in performing case-study analyses and interpretation, the worse their learning experience.

A further finding was from the structural model with control variables, which showed that none of the control variables had any effect on students' overall learning experiences. This implies that the result of including the variables in the structural model did not significantly alter any of the levels of the path coefficient in the structural model.

6. Discussion and conclusion

This study considered the overall learning experience of students in AIS courses. Using their own experiences in teaching AIS, along with a review of the literature and preliminary pilot testing, the authors formulated a series of hypotheses regarding AIS learning experiences and challenges, and developed and refined a research model and survey instrument. Data collection was then undertaken, and the data were analysed using the SEM with PLS technique. The results of the analysis highlight various factors contributing to students' overall experience and perceptions, including course structure, pre-existing knowledge of IS, teaching and assessment style, and support services. These factors hold important implications for AIS educators and curriculum designers.

The results indicate that course structure is the most important factor influencing students' perceptions of their learning experiences in AIS courses, suggesting that it is crucial for instructors and curriculum designers to develop a course structure that is not only logical and coherent but moreover is perceived as such from the students' vantage point. This concurs with Ramsden's (2003) recommendation. Students' perceptions are often ignored or taken lightly when curriculum reviews are undertaken, where the primary focus seems to be on the perceptions of academics, university managers and accreditation organisations. Our research suggests that curriculum designers need to heed Rodrigues's (2004) assertions that:

> [. . .] students' needs and the course's needs sometimes do not match. This can sometimes result in uncertainty and unpredictability for students, which can lead to frustration. Furthermore, teaching programs often have to be designed to accommodate the attainment of the organisation's goals, and such designs are sometimes not congruent with students' preferred learning techniques (p. 179).

We therefore strongly urge that students and their needs and perceptions be seriously considered in the design and review of AIS curricula. Where students' desires and perceptions are thought to be "unrealistic" or "unreasonable", designers and reviewers need to deal with those desires and perceptions in a transparent way. They should clearly justify chosen course structures and inform students early on in the teaching semester about the underlying reasoning behind these structures. This is particularly important when introducing AIS courses, where students are particularly prone to experiencing difficulties.

In line with previous studies (Barkman, 1998; Borthick, 1996), the results of our analysis also confirm the importance of prerequisite course(s) ensuring that accounting students commence AIS courses with some fundamental knowledge of IS. Curriculum developers and reviewers need to take into consideration students' background knowledge and experience, which our surveyed students ranked second in importance after course structure. Given the structural issues and the fact that there are no authoritative guidelines on what should be included in an AIS course, this becomes particularly important.

It is essential to differentiate here between information technology (IT) courses as prerequisites of AIS courses as against those that take a business information systems (BIS) perspective. IT courses are primarily concerned with the development of IT artefacts, while BIS courses contextualise such artefacts in a business domain and address their social and organisational implications as the means to greater efficiency and competitive advantage. It is therefore important to focus on BIS competencies that are relevant to accounting students and that optimally prepare them for engaging critically with AIS theory and practice.

Based on these considerations, a critical outlook could be developed further in prerequisite courses, and various first-year subjects. A questioning perspective of this kind will not always be a feature of students' previous educational experiences, especially where the student cohort includes large numbers of international students. These prerequisite units would allow for a gradual infusion of western teaching styles to complement the rich educational experiences that international students bring into the classroom, and that could be tapped into to the benefit of their student colleagues and teachers (Bloxham and West, 2004; Van Den Berg *et al.*, 2006). However, the introduction of a more "critical" perspective should take into account sensitive ethnic and gender issues arising from acknowledged differences in values, perceptions, and sensitivities arising from students' varying cultural backgrounds (Woszczynski *et al.*, 2006). Such a gradual introduction of a critical perspective may also assist in alleviating negative perceptions regarding types of assessment that involve critical thinking, recommendation and justification. It is likely that many international students may not have been exposed to assessment tasks of this kind during their schooling. The fact that AIS courses include components where no binary outcomes are available, with clear right and wrong answers, may indeed amplify such uncertainty and unfamiliarity. This potential barrier adds to the importance of

prerequisite courses that incorporate critical thinking and reflection in preparation for studying AIS courses, and for dealing with complex case studies.

The results of this study demonstrate, moreover, that assistance to students, in the form of academic support services, contributes to students' perceptions of a better overall learning experience. It is therefore essential to maintain support services to aid students in their transition to university. Services such as staff consultations provide a forum where students can communicate with instructors without in-class peer pressures, giving students the opportunity to privately raise any issues that are a source of concern, look for intellectual guidance, or clarify their perceptions and expectations. The issue of support is particularly important for the present study because many of the surveyed students had low GPAs, and 18.9 per cent of them were repeating the AIS courses with a further 2.1 per cent who were on their third attempt. Consequently, an extension of these services, along with encouraging the students to make use of them, may further contribute to a positive learning experience.

7. Limitations and future research

Our study was conducted in one university, so caution should be exercised in generalising the results to other contexts. Future research across multiple tertiary educational institutions in different countries could further validate, question, or extend our findings. It is worth noting that our surveyed cohort featured a majority of international students, so results may be different in institutions that cater mainly to domestic students.

Furthermore, our approach was exclusively quantitative. One-on-one interviews and focus groups could well uncover interesting information regarding the perceptions highlighted in this study, especially regarding the way students might elaborate on and explain the antecedents to these perceptions. It would be particularly interesting to further investigate through qualitative methods those issues that, contrary to our original hypotheses, were found in our study to be non-significant factors in the students' overall learning experiences. These factors include students' perceptions on late transition to university; fluency in the English language; and students' appreciation of the relevance of AIS.

Finally, research in this domain could contribute towards making AIS a richer and more enjoyable experience for students in the information age. We hope that this paper will initiate a discussion that eventuates in real improvements in the AIS curriculum and in AIS students' learning experiences.

References

Abbott, M. and Doucouliagos, C. (2009), "Competition and efficiency: overseas students and technical efficiency in Australian and New Zealand universities", *Education Economics*, Vol. 17 No. 1, pp. 31-57.

Aggarwal, A. (2003), *Web-Based Education: Learning from Experience*, University of Baltimore, Hershey, PA.

Barkman, A. (1998), "The use of live cases in the accounting information systems course", *Journal of Accounting Education*, Vol. 16 Nos 3/4, pp. 517-24.

Bloxham, S. and West, A. (2004), "Understanding the rules of the game: marking peer assessment as a medium for developing students' conceptions of assessment", *Assessment & Evaluation in Higher Education*, Vol. 29 No. 6, pp. 721-33.

Borthick, F. (1996), "Helping accountants learn to get the information managers want: the role of the accounting information systems course", *Journal of Information Systems*, Vol. 10 No. 2, pp. 75-85.

Chambel, M.J. and Curral, L. (2005), "Stress in academic life: work characteristics as predictors of student well-being and performance", *Applied Psychology: An International Review*, Vol. 54 No. 1, pp. 135-47.

Chayeb, L. and Best, P. (2005), "The accounting information systems curriculum: compliance with IFAC requirements", paper presented at the International Conference on Innovation in Accounting Teaching and Learning, 6-8 February, Hobart.

Chin, W. (1998), "Issues and opinion on structural equation modelling", *MIS Quarterly*, Vol. 22 No. 1, pp. vii-xvi.

Dillon, T. and Kruck, S.E. (2008), "Identifying employer needs from accounting information systems programs", *Journal of Information Systems Education*, Vol. 19 No. 4, p. 403.

Fordham, D.R. (2005), "New roles for AIS courses: a surprising finding from a case study", *Journal of Information Systems*, Vol. 19 No. 1, pp. 113-29.

Friedenberg, J.E. (2002), "The linguistic inaccessibility of US higher education and the inherent inequity of US IEPs: an argument for multilingual higher education", *Bilingual Research Journal*, Vol. 26 No. 2, pp. 309-26.

Gravoso, R., Pasa, A. and Mori, T. (2002), "Influence of students' prior learning experiences, learning conceptions and approaches on their learning outcomes", in Goody, A., Herrington, J. and Northcote, M. (Eds), *Research and Development in Higher Education: Volume 25 – Quality Conversations*, Higher Education Research and Development Society of Australasia (HERDSA), Canberra.

Hall, M., Ramsay, A. and Raven, J. (2004), "Changing the learning environment to promote deep learning approaches in first-year accounting students", *Accounting Education*, Vol. 13 No. 4, pp. 489-505.

Harman, G. (2004), "New directions in internationalising higher education: Australia's development as an exporter of higher education services", *Higher Education Policy*, Vol. 8 No. 2, pp. 263-72.

Kavanagh, M. and Drennan, L. (2008), "What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations", *Accounting and Finance*, Vol. 48, pp. 279-300.

Kember, D. (2000), "Misconceptions about the learning approaches, motivation and study practices of Asian students", *Higher Education Policy*, Vol. 40 No. 1, pp. 99-121.

Ladd, P.D. and Ruby, R. (1999), "Learning styles and adjustment issues of international students", *Journal of Education for Business*, Vol. 74 No. 6, pp. 363-7.

Lin, Z. and Deng, S. (1992), "Educating accounting in China: current experiences and future prospects", *The International Journal of Accounting*, Vol. 27 No. 2, pp. 164-77.

Marriott, P. (2002), "A longitudinal study of undergraduate accounting students' learning style preferences at two UK universities", *Accounting Education*, Vol. 11 No. 1, pp. 43-62.

Nathan, S. and Dunn, K.A. (1997), "Business press articles and higher level learning skills in accounting courses", *Education & Training*, Vol. 39 Nos 4/5, pp. 189-94.

Nonis, S.A. and Hudson, G.I. (2006), "Academic performance of college students: influence of time spent studying and working", *Journal of Education for Business*, Vol. 81 No. 3, pp. 151-9.

Potter, B. and Johnston, C. (2006), "The effect of interactive on-line learning systems on student learning outcomes in accounting", *Journal of Accounting Education*, Vol. 24, pp. 16-34.

Ramsden, P. (2003), *Learning to Teach in Higher Education*, Kogan Page, London.

Rodrigues, C.A. (2004), "The importance level of ten teaching/learning techniques as rated by university business students and instructors", *Journal of Management Development*, Vol. 23 No. 2, pp. 169-82.

Rosenthal, D.A., Russell, J. and Thomson, G. (2007), "Social connectedness among international students at an Australian university", *Social Indicators Research*, Vol. 84 No. 1, pp. 71-82.

Thompson, B.R. and Geren, P.R. (2002), "Classroom strategies for identifying and helping college students at risk of academic failure", *College Student Journal*, Vol. 36 No. 3, pp. 398-402.

Van Den Berg, I., Admiraal, W. and Pilot, A. (2006), "Peer assessment in university teaching: evaluating seven course designs", *Assessment & Evaluation in Higher Education*, Vol. 31 No. 1, pp. 19-36.

Webb, C., English, L. and Bonanno, H. (1995), "Collaboration in subject design: integration of the teaching and assessment of literacy skills into a first-year accounting course", *Accounting Education*, Vol. 4 No. 4, pp. 335-50.

Woszczynski, A., Myers, M. and Moody, J. (2006), "Student perceptions of diversity issues in IT", *Journal of Information Systems Education*, Vol. 17 No. 4, pp. 449-58.

Xiao, Z. and Dyson, J.R. (1999), "Chinese students' perceptions of good accounting teaching", *Accounting Education*, Vol. 8 No. 4, pp. 341-61.

Ye, J. (2006), "An examination of acculturative stress, interpersonal social support, and use of online ethnic social groups among Chinese international students", *The Howard Journal of Communications*, Vol. 17, pp. 1-20.

You, Z. and Jia, F. (2007), "Do they learn differently? An investigation of the pre-service teachers from US and China", *Teaching and Teacher Education*, Vol. 24, pp. 836-45.

Young, R. and Aoun, C. (2008), "Generic skills to reduce failure rates in an undergraduate accounting information system course", *Asian Social Science*, Vol. 4 No. 10, pp. 60-70.

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