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Practitioners' Perception Toward AIS Course Content Offered by Malaysian Universities

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ABSTRACT

The purpose of this study is to determine the degree of importance of each topic included in the Accounting Information Systems (AIS) course from the practitioners' point of views. This study was motivated by the increasing progress in information technology which proposed to re-examine the AIS course in order to meet the expectations and requirements of the profession. Three hundred and forty (340) questionnaires were sent to three different groups of companies namely public accounting firms, industry and commerce, and banking and finance. The response rate received is 22.35%. Respondents' opinions on the importance of AIS topics were measured using a five-point Likert scale. Results from the mean analysis showed that practitioners in Malaysia perceived all AIS topics listed as important. However, results from ANOVA analysis indicated that five (5) topics were perceived significantly different among the three groups of practitioners. The five topics are general concept of accounting information systems, procurement cycle, application software, entity-relationship diagram and programming languages. Further analysis using Scheffe test indicated that procurement cycle and entity-relationship diagram topics differ significantly between Industry and Commerce and Banking and Finance. Public Accounting Firms and Industry and Commerce differ significantly in the application software topics. There were significant differences between all the three groups in programming languages.

ABSTRAK

Tujuan kajian ini ialah untuk menentukan tahap kepentingan setiap topik dalam kursus Sistem Maklumat Perakaunan (SMP) daripada pandangan pengamal perakaunan. Kajian ini dimotivasikan oleh perkembangan pesat yang berlaku dalam teknologi maklumat yang memerlukan penyemakan semula dilakukan ke atas kursus SMP bagi memenuhi keperluan profesion perakaunan semasa. Tiga ratus empat puluh (340) soal selidik telah dihantar kepada tiga kumpulan industri yang berbeza iaitu firma perakaunan awam, industri dan perdagangan, serta bank dan syarikat kewangan. Peratusan maklum balas yang diterima adalah 22.35%. Pandangan responden ke atas tahap kepentingan topik SMP diukur menggunakan skala 'five-point likert'. Keputusan daripada analisis purata menunjukkan pengamal

perakaunan di Malaysia menyatakan kesemua topik yang disenaraikan sebagai penting. Analisis ANOVA menunjukkan lima (5) topik berbeza secara signifikan di antara tiga kumpulan tersebut iaitu konsep umum sistem maklumat perakaunan, kitaran perolehan, perisian aplikasi, gambarajah hubungan-entiti dan bahasa pemprograman. Analisis selanjutnya menggunakan ujian 'Scheffe' menunjukkan wujud perbezaan pendapat antara pengamal dalam kumpulan industri dan perdagangan dengan pengamal dalam kumpulan bank dan syarikat kewangan mengenai tajuk kitaran perolehan dan gambarajah hubungan-entiti. Pengamal di firma perakaunan awam dan industri dan perdagangan pula berbeza pendapat mengenai tajuk perisian aplikasi. Ketiga-tiga kumpulan pengamal berbeza pendapat mengenai tajuk bahasa pemprograman.

INTRODUCTION

Nowadays, a course in Accounting Information System (AIS) that emphasizes the role of computers is essential to accounting students. Today's accounting students are also tomorrow's users, auditors, managers, and designers of computer-based information systems. Accounting graduates should therefore possess a basic knowledge of computer-based information systems and their role in performing the accounting function in business organizations. According to the International Federation of Accountants (IFAC, 1995), Information Technology (IT) is one of the core competencies of professional accountants and requires special attention due to its explosive growth and rapid rate of change. IT as defined by IFAC (1995) refers to hardware and software products, information systems operations and management processes, and the skills required to apply those products and processes to the task of information productions and information system development, management and control.

Studies have indicated that the scope of IT knowledge integrated into AIS course varied due to the different opinions among academicians as to what topics are to be included. Hence, questions such as to what extent accounting students need to be exposed to IT still remains an issue. Do the AIS courses offered by the Malaysian Universities meet the expectation and requirement of the professions and the current trend of IT? To approach the issue, we investigate the perceptions on topics in AIS courses of the practitioners. The findings would potentially provide knowledge of the basic level of competence needed for entry into the accounting profession. The purpose of this study is therefore to investigate the topics considered important by practitioners in Malaysia as a guide for AIS instructors to design and re-evaluate the content of AIS courses.

LITERATURE REVIEW

An accounting information system course has long been recognized as essential to the undergraduate accounting program (Schroeder, 1972; Nestman and White, 1978; Cerullo, 1980). The American Accounting Association, for example, has considered to include computerized data processing in the curricula of accounting education since 1959 (Wu, 1983). Gelinas and Oram (1996) believe that AIS course could serve as the catalyst for improving the accounting and business curriculum. The current trends of IT where the creation of sophisticated and

advanced IT products will change the way people do businesses have made the development of AIS courses even more crucial, since accountants must be able to produce a reliable and timely information for the new users of the information age.

Despite the importance of the AIS course in the accounting curriculum, however, there is still no harmonization of the contents of the basic AIS course (Cerullo et al., 1985). Factors such as the current state of development of systems curricula, courses at school and the background and qualifications of the faculty who teach the course will determine the AIS contents. Wu (1983) raises the problem faced by many AIS instructors whereby academicians do not generally agree on subject details that should have been taught in the AIS course. Hooks and Siebel (1984) also agree that the AIS course content is still not well-defined and varies among textbooks and among instructors. The problem of non-harmonization arises because the responsibility for course content rests solely on the AIS instructors (Heagy and McMickle, 1988). Another reason is the relatively few competent accounting faculties available to properly guide the establishment of a truly professional program in accounting information systems development (Cerullo, 1980). Jensen and Arrington (1983) believe that too few changes have been made to accommodate modern information systems, internal control, and electronic data processing procedures that are becoming increasingly more common in the current practice. A growing gap also exists between what accountants do and what accounting educators teach (American Accounting Association, 1986). Wan and Choo (1988) have listed four possible reasons for the lack of a generally accepted set of AIS topics: i.e., AIS is a relatively new addition to the accounting curriculum compared to well established courses in accounting, current AIS textbooks do not provide a good guide to a list of topics that should be taught but tend to cover different topics at different lengths; there is no officially published document which prescribes the content to be included in an AIS course to meet the requirements for professional accounting qualifications; and practitioners' views and expectations as to what should be taught in an AIS course are not readily available from public sources.

One of the first relevant studies was conducted by Wu (1983) in the United States. He surveyed 200 accounting instructors specialising in AIS courses across the United States. The survey has identified nine out of fifteen original topics that could be considered as necessary for AIS courses. They are general system concepts, data processing technology, system documentation devices, business data processing systems, systems life cycle, internal controls, general ledger and budgetary control systems, AIS for resources and feedback controls, and financial planning and budgeting models.

Heagy and McMickle (1988) later expanded the study by Wu (1983) by conducting a survey among academicians and practitioners in the United States. Results showed that opinion among academicians and practitioners differ on some of the main AIS topics. Topics such as spreadsheet packages, statements and reports in manual accounting systems, journal and ledgers in manual accounting systems, adjusting entries in accounting issues of systems design, received a higher rating by practitioners as compared to academicians.

Wan and Choo (1988) surveyed all universities and colleges of advanced education (CAEs) and "Big-Eight" chartered accounting firms in Australia using the same list of topics and rating scale introduced by Wu (1983). The study found

that universities and CAEs did not differ in their choice of topics in an AIS programme. However, some differences emerged from the comparison of results between academic institutions and practitioners. Topics such as decision support systems, and financial planning and budgeting models that are considered by most of the practitioners to be necessary, are only considered by most of the academics to be optional.

Green and Bucksby (1995) investigated the relevance of IT topics currently being taught in accredited Australian university accounting courses. Respondents were selected among practitioners of the Australian Society of Certified Practising Accountants (ASCPA). Six subjects that require a high level of knowledge over the next three years (1995-1997) have been identified as accounting systems (transaction cycles, accounting packages, and implementation and assessment of general and application controls), use of software packages on personal computers (word processing, spreadsheet, graphics, databases, and forecasting models), the integration of the relevant theory of IT into traditional accounting units, the integration of the relevant practical components of IT into traditional accounting, security and controls with computer systems, and applications of computing (management information systems and electronic data interchange).

In Malaysia, several researches focused more on the development of an accounting education or accounting curricula as a whole (Choo et al., 1991; Barjoyai Bardai, 1992; Mohammad Adam Bakar, 1992; Al Murisi et al., 1996). Nonetheless, none of these researches specifically focused on the development of an AIS course but some of their findings are relevant to the present study. Mohammad Adam Bakar (1992), for example, has called for a revision in the way of teaching the AIS course in Malaysia due to the development of information technology. More researches in AIS course are needed to make sure that the content of the AIS course is relevant with the rapid rate of change in information technology. Barjoyai Bardai (1992) in his study of accounting graduates in one of the Malaysian Universities revealed that AIS courses received a higher rating compared to other courses in terms of usefulness and relevance. The respondents, however, felt that the coverage of the course was not sufficient. On the other hand, Al Murisi et al., (1996) in their study on the perception of the importance of accounting curriculum of one of the Malaysian Universities as perceived by employers found that the AIS course received a lower rating (ranked number 7 out of 9 compulsory accounting courses). The difference in the findings between those of Barjoyai Bardai (1992) and those of Al Murisi et al. (1996), could be due to the time differences and opinions between accounting graduates and practitioners. The purpose of this study is therefore to investigate the topics considered as important by the practitioners. This is done in order to meet the need and expectation of the accounting profession in view of the current trends of information technology in Malaysia and also as a guide for the AIS instructors in designing and re-evaluating the content of AIS courses.

OBJECTIVES OF THE STUDY

The objectives of this study are:

a. to investigate the perceptions of practitioners in Malaysia as to what topics should be included in an AIS course,

b. to identify the level of importance of each topic included in the AIS course,

c. to investigate whether there are significant differences on the AIS topics among the practitioners of different groups.

SIGNIFICANCE OF THE STUDY

The findings of this study has a potential usage for accounting academicians in identifying relevant topics considered important by practitioners so as to determine the strength and weaknesses of the existing AIS courses offered by Malaysian Universities. Further, the survey may suggest ways to design and evaluate the content of AIS courses so that they could meet the expectation and requirement of the accounting profession. The findings could also be used to coordinate the AIS courses offered by all tertiary institutions in Malaysia in order to improve the level of computer literacy of accounting students in facing the challenges of the information age.

METHODOLOGY

A total of 340 questionnaires were sent to three groups of practitioners, namely public accounting firms (n=84), banking and finance (n=89), and industry and commerce[1] n=167). A systematic sampling method was used in selecting the sample size of each group. The selection of public accounting firms was based on the 1996 lists of Malaysian Institute of Accountants; industry and commerce was based on the FMM Directory 1996; and banking and finance was based on the Kuala Lumpur Bankers Directory 1996. The questionnaires were addressed to managing directors of practitioners in industry and commerce, and banking and finance. For practitioners in public accounting firms, the questionnaires were addressed to managing partners. They were asked to forward the questionnaire to the person responsible for AIS development in the organization.

The questionnaire contained a list of fifty-three (53) topics covered in several AIS courses. The topics were compiled based on IEG11[2] issued by IFAC (1995), examination of to six of the Malaysian Public Universities AIS syllabus, six AIS textbooks, published articles concerning accounting education, and conversation with accounting systems instructors. An attempt was made to include every topic that could be covered in the AIS course. However, due to the large number of topics and the risk of misinterpretations by respondents, the topics were grouped into nine categories as follows:

1. Introduction to Information Systems.
2. Business Sub-Systems Cycles.
3. Types of Document Output.
4. Elements of Computerized Systems.
5. Documentation Tools.
6. Systems Development Life Cycle.
7. Information System Control Concepts.
8. Auditing and Information Control Techniques in Computerized Systems.
9. Programming and Applications Software.

The questionnaire attempted to gauge the perceptions of practitioners as to what topics should be included in an AIS programme. Respondents were asked to indicate their perceptions on the importance of each topic using a five-point Likert scale (1 = Not Important to 5 = Very Important).

DATA ANALYSIS

Descriptive statistics were carried out to determine the overall mean of all the topics. The mean of 3.00 and above imply that the related topics is perceived as important by the practitioners. One-way analysis of variance (ANOVA) was then used to test the differences that may exist in practitioners' opinion among the three groups of respondents on all AIS topics. Finally, the post-hoc multiple range test, using the Scheffe test was performed to test the differences between the Public Accounting Firm, Industry and Commerce, and Banking and Finance.

RESULTS AND FINDINGS

Respondent

Seventy-six (76) completed questionnaires were received within a month giving a total response rate of 22.35 percent. Table 1 summarizes the response rate from each of the three groups.

Table 1
Questionnaires Completed and Response Rate by Types of Company

Types of Company	Questionnaires Completed	Percentage (%)
Public Accounting Firms	18	24
Industry and Commerce	30	39
Banking and Finance	28	37
Total	76	100

Demographic Information

Table 2
Academic Qualification

Academic Qualification	Public Accounting Firms (%)	Industry and Commerce (%)	Banking and Finance (%)	Overall (%)
Certificate	-	4	-	2
Diploma	-	4	5	3
Degree	6	38	50	34
Masters	13	12	15	13
Professional	81	42	30	48
Total	100	100	100	100

Table 3
Years of Experience

Years	Public Accounting Firms (%)	Industry and Commerce (%)	Banking and Finance (%)	Overall (%)
Less than 3	11	10	11	11
3 - 4	6	-	7	4
5 - 6	11	24	21	20
6 and above	72	66	61	65
Total	100	100	100	100

The Importance of AIS Topics

Table 4 shows the ten most important AIS topics perceived by practitioners in Malaysia, whereas Appendix A shows the practitioners, perception of all AIS topics. The mean of 3.00 and above indicates the importance of the topic. The findings suggested that all of the 53 AIS topics listed in the questionnaire were perceived by practitioners as important.

ANOVA Analysis

Results from the mean analysis indicate that on the whole, respondents perceived all AIS topics as important irrespective of their identity. None the less, respondents may perceive differently on some of the topics because each of them had different education and experience. Thus, their perceptions differ on the topics. Summary results of ANOVA are shown in Appendix B. From the analysis, we found that only five topics were significantly different among the three groups as follows:

1. General concepts of information systems (GCIS)
2. Procurement cycle (PROCCY)
3. Application software (APSW)
4. Entity-relationship diagram (ERD)
5. Programming language (PRL)

Table 4
The Ten Most Important AIS Topics Perceived by Practitioners

	Topics	Mean
1.	Finance Management and Financial Reporting Cycle	4.6184
2.	General Concepts of Accounting Information Systems	4.5263
3.	Accounting Records	4.5000
4.	Risks and Exposures in Computer-Based Information Systems	4.4868
5.	Accounting Reports	4.4868
6.	Revenue Cycle	4.4737
7.	Management Reports	4.4474
8.	Spreadsheet Packages	4.4366
9.	Disaster Recovery Planning and Control	4.4342
10.	Control Over Access	4.4342

Scheffe Test

The post-hoc multiple range test, using Scheffe test was further performed to test the differences between the three groups of Public Accounting Firm, Industry and Commerce, and Banking and Finance. Results in Appendix C shows that procurement cycle and entity-relationship diagram topics differ significantly between Industry and Commerce and Banking and Finance. Public Accounting Firms and Industry and Commerce differs significantly in the application software topic. There were significant differences between all the three groups in programming language. However, for the general concepts of information systems topic, Scheffe test shows that no difference exists between the three groups although ANOVA test shows that it is below 0.05 significant level. Summary results of the Scheffe test are shown in Appendix C.

Packages Used

For topics under the category of Programming and Application Software, respondents were further asked to state the packages used most by their organizations. Overall, the spreadsheet packages used were Excel (46%), Lotus (28%), and about 26% respondents used spreadsheet packages other than those listed in the questionnaire. The database packages used were Microsoft Access (35%) and DBase (21%). Only 2% respondents used paradox and 42% respondents used database packages other than those listed in the questionnaire. About 70% used accounting packages other than those listed. 17% respondents used Accpac Plus and 7% respondents used DacEasy. Only 3% respondents used FACT and UBS each.

SUMMARY

The descriptive analysis showed that practitioners in Malaysia perceived all the AIS topics as important. ANOVA showed that practitioners' opinion did not differ significantly on 48, or 90.5 percent, of the 53 topics. However, further analysis using the Scheffe test shows that practitioners' opinion by industry was significantly different on 4 topics, namely procurement cycle, entity-relationship diagram, application software and programming language. The differences may be due to the different exposure and background practices of each group. The findings help to provide guidance to the AIS instructors in Malaysia in designing the AIS syllabus. Studies showed that topics such as business cycle, types of document, information system control concepts, auditing and information control techniques in computerized systems, application software, and system development life cycle, received a relatively high rank among practitioners and therefore should be given greater emphasis. On the other hand, topics such as elements of computerized system, documentation tools, and programming languages received a relatively low rating and therefore should be given less emphasis.

Other findings that should be noted by AIS instructors is the use of diverse application softwares in the industry. Mean analysis showed that spread sheet package was ranked 8th out of 53 topics. This finding corresponds to the studies done in the United States and Australia. In the United States (Heagy and McMickle, 1988), spreadsheet package ranked 2nd out of 59 topics, and in Australia (Green and Bucksby, 1995), studies showed that spreadsheet package requires a high level of knowledge both at present and in the future. Database package, however, received a lower rating

(ranked 48th out of 53) as compared to spreadsheet packages. In the United States (Heagy and McMickle, 1988), database package ranked 20th out of 59 topics, and in Australia (Green and Bucksby, 1995), studies showed that database package requires a high level of knowledge both at present and in the future.

This study attempts to investigate practitioners' perception in terms of topics that should be included in the AIS course. However, some limitations that should be considered in future research may have affected the results of the study. First, this study does not include practitioners from the government sector. Second, in terms of academic qualification, not all respondents had accounting background. Some of them were computer science or management information system graduates taking charge of computerized accounting systems, thus their opinion may be different from those respondents having accounting background. Finally, the practitioners were only asked their opinion on the importance of AIS topics at present. This study would be more meaningful if the practitioners were also asked their needs on the AIS topics for the next three or five years.

In conclusion, we believe the results of this study provide a useful basis for accounting academicians in drawing up the contents of an AIS course, and a benchmark against which the appropriateness of the topics in an existing AIS course may be verified.

ENDNOTES

1. Industry and Commerce includes all types of industry other than Public Accounting Firms and Banking and Finance.
2. Information Technology in the Accounting Curriculum.

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APPENDIX A. Practitioners' Perception of the Importance of AIS Topics

Topic	Mean	Rank
INTRODUCTION TO INFORMATION SYSTEMS		
General Concepts of Systems	4.0132	31
General Concepts of Information Systems	4.0789	25
General Concepts of Management Information Systems	4.3158	17
General Concepts of Accounting Information Systems	4.5263	2
General Concepts of Computerized Systems	4.0921	24
BUSINESS SUB-SYSTEM CYCLES		
Revenue Cycle	4.4737	6
Procurement Cycle	4.2895	18
Production Cycle	3.8933	37
Personnel/Payroll Cycle	3.8947	36
Financial Management and Financial Reporting Cycle	4.6184	1
TYPES OF DOCUMENTS		
Business Documents	3.9605	33
Accounting Records	4.5000	3
Accounting Reports	4.4868	4
Management Reports	4.4474	7
Control Reports	4.4079	12
ELEMENTS OF COMPUTERIZED SYSTEMS		
Evolution of Computer Technology	3.1053	53
Hardware	3.1447	52
System Software	3.5526	49
Application Software	4.0263	28
Data Storage	3.7895	43
Processing Methods	3.6974	47
Data Communication and Networks	3.7500	46
Job Functions and Organization of the IT Department	3.7763	44

Topic	Mean	Rank
DOCUMENTATION TOOLS		
System Flowcharts	3.8421	42
Program Flowcharts	3.4211	50
Document Flowcharts	3.8816	38
Control Flowcharts	3.9342	35
Data Flow Diagrams	3.8816	39
Project Management Tools	3.7632	45
Entity-Relationship Diagrams	3.6081	48
SYSTEMS DEVELOPMENT LIFE CYCLE		
Organization and Planning	4.1842	21
Justification and Selection	3.8553	40
Systems Analysis	4.0263	27
Systems Design	4.0132	29
Implementation and Operation	4.2368	19
INFORMATION SYSTEM CONTROL CONCEPTS		
Risks and Exposures in Manual Systems	4.1711	22
Risks and Exposures in Computer-Based Information Systems	4.4868	4
Responsibility for Control	4.4079	11
Control Objectives	4.3289	16
Control Our System Components	3.9868	32
Control Over Applications	4.1447	23
General Controls	4.0132	30
AUDITING AND INFORMATION CONTROL TECHNIQUES IN COMPUTERIZED SYSTEMS		
Control Over System Development and Acquisition	3.9474	34
Control Over System Implementation	4.0658	26
Control Over Program Change	4.3289	15
Control Over Access	4.4342	9
Control Over Applications	4.2133	20
Disaster Recovery Planning and Control	4.4342	9
Auditing and Standards	4.3333	14
PROGRAMMING AND APPLICATIONS SOFTWARE		
Spreadsheet Packages	4.4366	8
Database Packages	3.8500	41
Accounting Packages	4.3559	13
Programming Languages	3.2295	51

APPENDIX B. Summary Results of One-Way ANOVA

Variable		Sum of Square	Df	Mean Square	F	Sig.
GCIS	Between Groups	4.834	2	2.417	3.349	.041*
	Within Groups	52.692	73	.722		
	Total	57.526	75			
PROCCY	Between Groups	4.165	2	2.082	3.344	.041*
	Within Groups	45.467	73	.623		
	Total	49.632	75			
APSW	Between Groups	4.989	2	2.494	3.719	.029**
	Within Groups	48.959	73	.671		
	Total	53.947	75			
ERD	Between Groups	8.207	2	4.104	5.453	.006***
	Within Groups	53.428	71	.753		
	Total	61.635	73			
PRL	Between Groups	18.115	2	9.058	6.852	.002***
	Within Groups	76.672	58	1.322		
	Total	94.787	60			

* $p < 0.05$ ** $p < 0.03$ *** $p < 0.01$

APPENDIX C. Summary Results of Scheffe Test

Dependent Variable	(I) COTYPE*	(J) COTYPE	Mean Difference	Std. Error	Sig.
GCIS	1	2	.5111	.253	.138
		3	-7.94E-03	.257	1.000
	2	1	-.5111	.253	.138
		3	-.5190	.223	.074
	3	1	7.937E-03	.257	1.000
		2	.5190	.223	.074
PROCCY	1	2	-.2000	.235	.698
		3	.3333	.238	.381
	2	1	.2000	.235	.698
		3	.5333	.207	.042**
	3	1	-.3333	.238	.381
		2	-.5333	.207	.042**
APSW	1	2	-.4222	.244	.231
		3	-.6746	.247	.029**
	2	1	.4222	.244	.231
		3	-.2524	.215	.506
	3	1	.6746	.247	.029**
		2	.2524	.215	.506
ERD	1	2	.3469	.265	.429
		3	-.4118	.267	.310
	2	1	-.3469	.265	.429
		3	-.7586	.230	.006**
	3	1	.4118	.267	.310
		2	.7586	.230	.006
PRL	1	2	-5.43E-02	.384	.990
		3	-1.1688	.393	.016**
	2	1	5.429E-02	.384	.990
		3	-1.1145	.336	.007**
	3	1	1.1688	.393	.016**
		2	1.1145	.336	.007**

* COTYPE 1 = Public Accounting Firm, 2 = Banking and Finance, 3 = Commerce and Industry

** The mean difference is significant at the 0.05 level.

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