PERCEIVED IMPORTANCE OF INFORMATION SYSTEMS TEACHING: THE BUSINESS STUDENTS' PERSPECTIVE

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ABSTRACT

Today, it is common to find Information Systems (IS) subjects being taught at undergraduate and graduate levels in business schools. However, we observed that business students generally think that IS subjects are not relevant to their studies, hence reducing their interest in the development, implementation and management of information systems. This phenomenon prompts us to ask some questions: Are we delivering the right IS content to the business students? If we are not, then which of the IS topics are considered important or have high perceived value among the business students? What changes should be made to the existing IS syllabuses and curriculum? The purpose of this research is to examine, from the perspective of business students, the IS topics that are considered important or have high perceived value. The findings of the research provide a strong foundation in designing the syllabus of IS subjects offered by business schools.

1.0 INTRODUCTION

Today, it is common to find information systems (IS) subjects being taught at undergraduate, postgraduate and professional levels. A quick review of course curriculum has revealed the current standing of IS subjects in business schools and professional bodies in Malaysia. The Chartered Institute of Management Accountants (CIMA)'s Paper P4, Organisational Management and Information Systems, includes topics such as systems theory, IT infrastructure, systems development, and so on. The Association of Chartered Certified Accountants (ACCA)'s Paper 2, Information for Management Control, discusses how computer systems help provide information for managerial decision-making purposes. The International Education Guideline 11 - Information Technology in the Accounting Curriculum, released by the International Federation of Accountants (IFAC) in 1996, portrays accountants as users, managers, designers and evaluators of information systems and suggests that IT education is a critical component of holistic accounting studies.

Having taught several IS subjects such as Information Systems, Managing Information Systems and Electronic Commerce to undergraduate business students; we observed that business students generally think that IS subjects are not relevant to their studies, and as such they have no interest in learning more about development, implementation and management of information systems. This phenomenon prompts us to ask some questions: What has gone wrong? Are we delivering the right IS contents to the business students? If we are not, then, which of the IS topics are considered important or have high perceived value among the business students? What changes should be made to the existing IS syllabuses?

This research has two objectives: (1) to examine IS topics that are considered important from the perspective of business students and (2) to compare if there are differences in perceived importance of IS topics between the two groups of business students: accounting and business administration. The findings of the research will provide a strong foundation in designing syllabuses of IS subjects offered by business schools.

In the next section, the background and rationale of the study is discussed. Study design and study findings are described in the next two sections that follow. The last two sections present the conclusion and future research directions respectively.

2.0 BACKGROUND AND RATIONALE

Since the early seventies, IS professional associations, e.g. ACM, AIS, AITP (formerly DPMA) have been working on curriculum development for the IS discipline (Couger et al. 1995, 1997; Gorgone et al., 2002; Kung et al., 2006; Nunamaker et al., 1982). The IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems (IS '02) is an output of a joint effort between ACM, AIS and AITP. Individual researchers have also contributed to the development of IS curriculum, e.g. Gill and Hu (1998/1999) surveyed 442 IS faculties to study the right contents for developing graduate IS programs. Burn and Ma (1996) shared the experience in the development of curriculum for a post-graduate strategic IS management program.

Organizations have long recognized the benefits of IS in creating and sustaining competitive advantage. Strategic IS planning and management is regarded as one of the key competencies of business managers; they learn that competence in business schools (Lee, 2001). IS subjects are common in business curriculums, covering a broad range of topics from IS concepts, systems analysis to business continuity and so on. It is also common to find software applications for word processing, spreadsheets and presentations being taught (Polansky, 2001). Some business schools have integrated commercial software applications into their curriculums, e.g. the popularity of enterprise resource planning (ERP) systems has driven business school in the US to teach ERP (Becerra-Fernandez et al., 2000; Johnson et al., 2004; Seethamraju, 2007).

Among the vast range of IS topics, some researchers have tried to find out the right mix of topics to be taught. Ehie (2002) interviewed MIS practitioners of 14 companies to propose an undergraduate MIS curriculum. Mcleod (1996) conducted a mail survey, involving some 2000 college instructors who taught the subject Systems Analysis and Design (SAD) in two-year and four-year programmes, to search for details such as objectives, topics and tools to be covered in

the subject. A study was conducted by Kohli and Gupta (2002) in an attempt to understand the perception of undergraduate students towards the SAD subject.

These past studies either proposed curriculums for IS courses, examined the issue from the perspective of IS practitioners or had a rather narrow focus on a specific IS subject, e.g. SAD. IS teaching involves several stakeholders, most importantly the students and employers. We must understand the needs of individual groups before designing the syllabuses (Hemingway and Grouh, 2000). This study attempts to identify the right mix of IS topics to be incorporated into business curriculum, with a focus on the business students, and expands the scope to include most IS topics rather than focusing on a particular IS subject.

Before we can identify the right IS topics for business students, there is a need to first understand what these IS topics are. To define the scope of IS, several frameworks have been proposed. Khazanchi and Munkvold (2000), having examined both primary and secondary reference disciplines, attempted to identify topics for inclusion in the IS field. Nunamaker et al. (1982) suggested that a curriculum design should consider three aspects: people, skills and tools. The joint collaboration of several IS professional bodies proposed the IS body of Knowledge (Couger et al., 1995; 1997; Gorgone et al., 2002). Having reviewed extensive literature, subject syllabuses, texts, and industrial surveys, Bacon and Fitzgerald (2001) categorized five main areas essential to cover a wide spectrum of IS topics (see Figure 1). Although considered a comprehensive framework, not all topics appeal to the business students. As pointed out by Bacon and Fitzgerald (2001), the framework could be customized to accommodate different groups. A topic might be perceived of as utmost important by some but is of no importance to the others, e.g. about the topic systems methodology, perception of IS students would be different from that of business students.

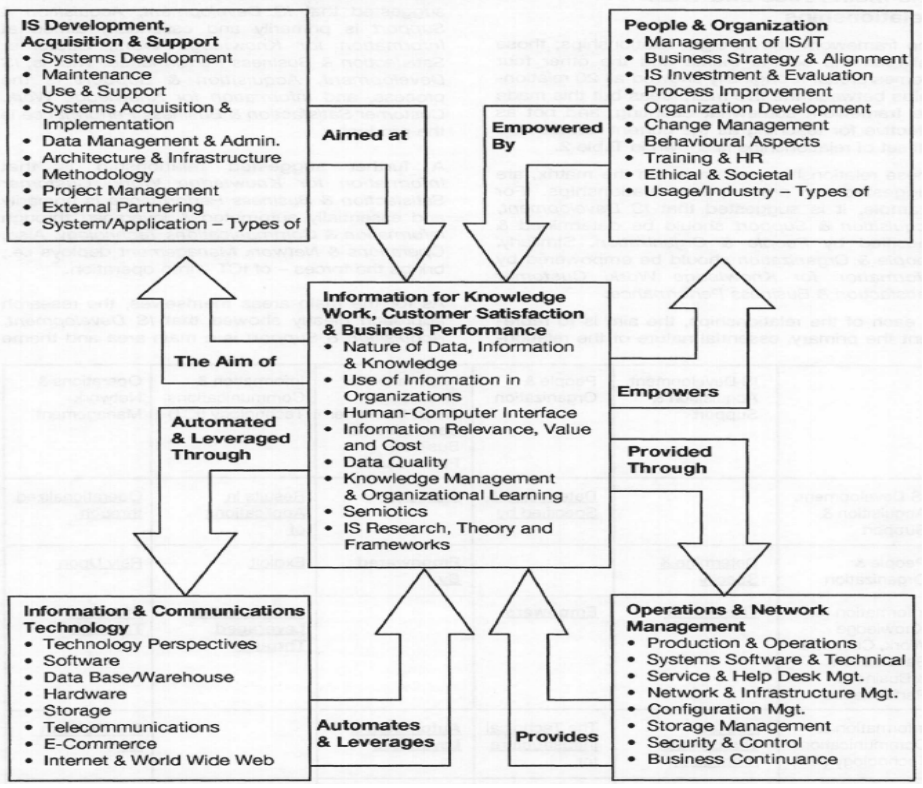

Figure 1: A systematic framework for the field of Information Systems (Bacon and Fitzgerald, 2001)

This research adopts the proposed framework by Bacon and Fitzgerald (2001) to examine the five main areas of IS topics, i.e. (1) IS development, acquisition and support, (2) people and organization, (3) information for knowledge work, customer satisfaction and business performance, (4) information and communications technology, and (5) operations and network management.

3.0 STUDY DESIGN

3.1 Pretest

Based on the model of Bacon and Fitzgerald (2001), we drafted a preliminary questionnaire. To aid understanding, a short explanation was provided for each topic. Three senior IS lecturers helped revise the questions for conciseness and coherence. The preliminary questionnaire had two parts. Part A consisted of a total of 44 items sorted by the five main IS areas. All items were measured using a 6-point Likert scale, with 1 being "not important at all" and 6 "being extremely important". Part B had 5 demographic questions. The revised preliminary questionnaire was then subjected to a pretest.

The questionnaire was pre-tested with a focus group of 10 business students. The pretest was necessary to ensure that the students had no difficulty in understanding the questions. As a result of the pretest, some short explanations were re-worded to suit the level of understanding of business students. After the revision, the questionnaire was reviewed again by the same group of students. The students reported that the questionnaire was satisfactory.

3.2 Sample and Profile of Respondents

The target respondents were a total of 979 Year 3 Semester 2 Accounting or Business Administration students who were studying courses at a private higher education institute. The reason why only Year 3 Semester 2 students were surveyed was because at this stage of their studies these students would have studied the subjects Information Systems (i.e. fundamentals of IS), Managing Information Systems (i.e. systems analysis and design) and E-Commerce as prescribed in the structure of Accounting as well as Business Administration courses. We rationalised that these students would be more familiar with the terms and hence were able to make better judgment in answering the questions. To ease distribution, the questionnaire was available on the Internet for four weeks. An email was sent to all 979 students, inviting them to respond to the online questionnaire. Two weeks after the initial email invitation, 74 valid responses were received. An email reminder was sent two weeks after the initial email invitation. An additional 43 valid responses were received. Thus, a total of 117 responses were received, giving a response rate of about 12%. To check for non-response bias, the 74 responses received within the first two weeks were categorized as early respondents and the subsequent 42 responses received after the email reminder as late respondents. Statistical analyses showed no significant differences between the groups.

Demographics of the respondents are shown in Table 1. In total, about 51% of the respondents perceived the IS subjects taught were relevant to their field of studies, while about 41%

perceived these as somewhat relevant. About 39% expressed high interest level in the IS subjects taught, while about 38% were somewhat interested.

Table 1: Demographics of Respondents

	Accounting		Bus. Admin.		Total	
	Frequency	%	Frequency	%	Frequency	%
Gender						
Female	46	88.46	54	83.08	100	85.47
Male	6	11.54	11	16.92	17	14.53
Total	52		65		117	100.00
Perceived relevance of IS subjects						
Highly relevant	4	7.69	1	1.54	5	4.27
Revelant	19	36.54	36	55.38	55	47.01
Somewhat relevant	22	42.31	26	40.00	48	41.03
Somewhat not relevant	7	13.46	1	1.54	8	6.84
Irrelevant	0	0.00	1	1.54	1	0.85
Irrelevant at all	0	0.00	0	0.00	0	0.00
Total	52		65		117	100.00
Interest level of IS subjects						
Higly interested	0	0.00	2	3.08	2	1.71
Interested	20	38.46	24	36.92	44	37.61
Somewhat interested	18	34.62	27	41.54	45	38.46
Somewhat not interested	12	23.08	10	15.38	22	18.80
Not interested	0	0.00	2	3.08	2	1.71
Not interested at all	2	3.85	0	0.00	2	1.71
Total	52		65		117	100.00

4.0 STUDY FINDINGS

4.1 Exploratory Factor Analysis

Inter-item correlations were first examined to delete items with a correlation of < 0.30 between it and all other items. None of items was deleted. A principal components analysis was then performed on all 44 items of the five main IS areas to reveal the underlying factors. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were checked for appropriateness of factor analysis (Hair et al. 2006). Both showed satisfactory results (KMO = 0.826, $p < 0.05$). Assuming that there were no correlation among the factors, the rotation method Varimax was used. An item was considered for deletion if it (1) loaded < 0.5 on any one of the factors or cross-loaded > 0.5 on two or more factors. After five iterations and a number of items deleted, the final rotated component matrix presented nine clear interpretable factors. To check for internal reliability consistency, Cronbach's alpha was computed for each factor extracted. All showed satisfactory results, except factor 5 ($\alpha < 0.6$). A close examination of the item-total statistics of factor 5 revealed that one of the items was causing the low alpha. The item was then deleted to help improve the alpha ($\alpha > 0.6$) of factor 5. As a result of deleting item 5, a principal components analysis was performed again. Table 2 showed the final rotated component matrix, factor loadings and Cronbach's alpha. Although alphas of Factors 5, 6 and 8 were between 0.6 and 0.7, they still satisfied the minimum 0.6 cutoff value for an exploratory study, as suggested by Hair et al (2006).

	1	2	3	4	5	6	7	8	9
C2	0.827								
C4	0.812								
C3	0.769								
C5	0.767								
A6	0.679								
C6	0.581								
E2		0.807							
E4		0.789							
E5		0.702							
E1		0.672							
E3		0.540							
D2			0.756						
D1			0.755						
D3			0.738						
D4			0.734						
B4				0.855					
B5				0.822					
A10					0.706				
A8					0.693				
A9					0.685				
A3						0.790			
A4						0.758			
D8							0.845		
D7							0.768		
A1								0.784	
A2								0.761	
B8									0.785
B7									0.766
Eigenvalue	8.800	2.262	1.838	1.789	1.369	1.267	1.150	1.080	1.009
Cum. % of variance	14.678	25.898	36.454	43.622	49.913	55.991	62.024	67.959	73.443
Cronbach's alpha	0.889	0.835	0.853	0.758	0.625	0.650	0.741	0.671	0.723

Table 2:
Factor Loadings

Note:
Overall Kaiser-Meyer-Olkin (KMO) = 0.815

Overall Bartlett's test = 0.000

Factor loadings < 0.5 are not shown

Extraction method: Principal components analysis

Rotation method: Varimax with Kaiser normalization

4.2 Independent Samples T Test

We were interested to find out if there were any significant differences in each factor between the accounting and business administration students. An independent-samples t test was performed for this purpose. Table 3 shows that for factors 1, 2, 3, 4, 6, 7, 9, there were significant differences between the accounting and business administration students on perceived importance of each factor. For factor 1, the mean importance score of accounting students (mean = 4.301, SD = 0.840) was significantly different from that of business administration students (mean = 4.721, SD = 0.768). For factor 2, the mean importance score of accounting students (mean = 4.542, SD = 0.796) was significantly different from that of business administration students (mean = 4.825, SD = 0.675). For factor 3, the mean importance score of accounting students (mean = 4.255, SD = 0.796) was significantly different from that of business administration students (mean = 4.631, SD = 0.745). For factor 4, the mean importance score of accounting students (mean = 4.962, SD = 0.747) was significantly different from that of business administration students (mean = 5.238, SD = 0.632). For factor 6, the mean importance score of accounting students (mean = 4.558, SD = 0.784) was significantly different from that of business administration students (mean = 4.769, SD = 0.593). For factor 7, the mean importance score of accounting students (mean = 4.971, SD = 0.717) was significantly different from that of business administration students (mean = 5.254, SD = 0.745). For factor 9, the mean importance score of accounting students (mean = 4.654, SD = 1.123) was significantly different from that of business administration students (mean = 5.077, SD = 0.607). As for factors 5 and 8, there were no significant differences between the accounting and business administration students.

Factor	Major	Frequency	Mean	SD	t-statistics	p-value
F1	Acc	52	4.301	0.840	-2.815	0.006 ***
	BA	65	4.721	0.768		
F2	Acc	52	4.542	0.796	-2.075	0.040 **
	BA	65	4.825	0.675		
F3	Acc	52	4.255	0.796	-2.631	0.010 **
	BA	65	4.631	0.745		
F4	Acc	52	4.962	0.747	-2.173	0.032 **
	BA	65	5.238	0.632		
F5	Acc	52	4.327	0.777	-1.151	0.252 ns
	BA	65	4.482	0.680		
F6	Acc	52	4.558	0.784	-1.661	0.099 *
	BA	65	4.769	0.593		
F7	Acc	52	4.971	0.717	-2.073	0.040 **
	BA	65	5.254	0.745		
F8	Acc	52	4.471	0.795	-0.899	0.371 ns
	BA	65	4.600	0.751		
F9	Acc	52	4.654	1.123	-2.446	0.017 **
	BA	65	5.077	0.607		

Table 3: Results of Independent Samples T Test

Note: *p<0.1; **p<0.05; ***p<0.01; ns: not significant

A close examination of the mean importance score of all nine factors revealed that business administration students in general perceived IS topics to be more important, compared with the accounting students. This finding might not be surprising, given that accounting studies are highly specialized and focused, while business administration studies are more general and broad. Accounting students might prefer to have a concentration of accounting related topics. This finding contradicts the views of International Federation of Accountants (IFAC) that accountants are users, managers, designers and evaluators of information systems. This research showed that accounting students might think otherwise.

5.0 CONCLUSION

With the identification of the nine factors, this research suggests that there are nine key IS topics that are perceived to be important by business students. In general, slightly more than half of the students surveyed reported that IS topics were relevant to their studies. About 40% of them showed interest in the IS topics. This research also found out that business administration students perceived IS topics to be more important, compared to the accounting students. In conclusion, the findings of this research assist in the design of syllabuses of IS subjects offered by business schools.

6.0 FUTURE RESEARCH DIRECTIONS

This research included only undergraduate students who were enrolled in the Accounting or Business Administration courses as units of analysis. While it is essential to listen to the business students about IS topics that are perceived to be important, it is also equally critical, at the same time, for us to hear from their future employers. Industry-academia collaboration is essential in designing a balanced business curriculum, which helps to equip students with knowledge needed by the industry. A follow-up study, involving employers, is required to paint a complete picture on the perceived importance of IS topics - we then have to teach these topics in business schools (Kim et al, 2006; Trauth et al., 1993).

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