December 2003

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IS in the Accounting Core Curriculum and Employer Knowledge Requirements: Integrating Research into a Graduate AIS Course

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Abstract

Currently, many information systems (IS) departments and faculty are concerned about the status of information systems education and the role of information systems in both the undergraduate and graduate business core curriculum is being questioned internationally. The exploratory study described here examines the IS curriculum as it relates to accounting majors and the perceived needs of the business community, using the students in a graduate AIS class as research partners as a learning tool in the course.

Introduction

Many information systems (IS) departments and faculty are concerned about the status of IS education, and the relevance of the IS discipline is undergoing scrutiny. Many in the IS community believe the current draft version of the American Academy of Collegiate Schools of Business International (AACSB) Accreditation Standards does not represent the increasing importance of information technology and information systems in the careers and lives of business school graduates (Ives et al 2002). Senior IS scholars have concluded that the AACSB's omission stems at least in part from the failure of the IS academic community to effectively communicate the core knowledge that is necessary for every business school graduate and to explain why that knowledge cannot be successfully included in courses offered by other disciplines (Ives et al, 2002).

These questions are not new to the field of IS. As early as 1980, the legitimacy of IS as an academic discipline has been questioned. IS is a discipline driven by technological change. Academic programs are constantly striving to maintain currency, improve computing facilities, and improve integration with other business disciplines. Originally, IS was a discipline that produced computer programmers, now IS is challenged to produce technologically literate information analysts in addition to programmers. The strategic role IS plays has grown with advances in computing hardware and software, as processing power, bandwidth and storage capacity have at least doubled every 18 months and are predicted to continue to do so in the foreseeable future. Technological advances in wireless and ubiquitous computing are now impacting business, with new technologies continually on the horizon. IS education suddenly impacted all fields in business and needed to respond quickly to changing program demands. IS programs have been criticized for a failure to respond to the business community and for offering too narrow a focus (Simon and Wang 1999). IS curricula may not be aligned with business needs and the concept of a generic IS curriculum may be obsolete.

The undergraduate and graduate "Introduction to Information Systems" courses taught at different universities not only have different names, but different content. Some are more oriented toward technology, others toward management. Given evolving standards and tight budgets, some business schools have eliminated IS courses from the core business curriculum (Avison 2003). Currently, 4 of 9 business programs in colleges in the Florida university system require a core information systems course. Many IS academics believe there is some core knowledge all IS students should know that can only be addressed in courses offered by the IS department, such as (from Ives et al 2003):

- Systems thinking
- Organizational competitiveness
- Databases
- Technological infrastructures
- Dependence on technology platforms
- Investments in information technology (IT) infrastructure
- Networking and network concepts, components, capabilities, and trends
- Wireless and ubiquitous computing
- Organizational processes and IS
- Ethical, criminal and security issues

The role of IS education in both the undergraduate and graduate business core curriculum is being questioned internationally also (Avison 2003). Before changes can be made to any program, however, program strengths and weaknesses must be determined. The exploratory study described here examines the IS curriculum as it relates to accounting majors and the perceived needs of the business community. It is the first stage of a multi-stage research program to examine IS knowledge requirements in the major business disciplines. This information will allow business faculty to determine the role of information systems in undergraduate and graduate curricula and to synchronize curricula with business needs. This study also explores the use of students in a graduate AIS class as research partners as a learning tool in the course.

Rationale of this Study

"The "e" in e-business will soon be irrelevant."
(Alsop 1999)

Ives et al (2002) refer to the benefits of IT to the U.S. economy at the macro level. For example, they cite that IT currently is the major component of capital investment in the U.S. and that the current recession is the first of the nine since 1950 when productivity growth did not turn negative. However, achieving similar benefits in organizations requires the attention of managers knowledgeable of the capabilities and limitations of IS and IT.

Business school graduates require expertise in the areas of IS use, development, integration and management to make informed decisions about technology use in their organizations and to meaningfully participate in, and manage, the development and maintenance of business systems, technologies, and processes. Although computer science and IS majors may build and maintain the infrastructure over which business processes run, business graduates must understand how the technology and systems work, as well as how they can be used and misused, in order to effectively plan, create and manage the infrastructure and business processes that depend on them.

Information systems are highly concentrated in accounting as a business unit. Accountants are involved as users of IS for financial statement and tax return preparation; as developers of IS to support internal business processes; and as evaluators of IS in their role as auditors (IFAC 11 2003). The IS function was frequently placed under accounting in the corporate hierarchy in the early years of IS. The International Federation of Accountants issued International Education Guideline 11 (IFAC 11 2003) to provide guidance to prepare professional accountants to work in the IT environment. This comprehensive guideline provides knowledge and skill requirements both for formal education and on-the-job training. The guideline suggests that knowledge and skills can be delivered within standalone course(s) or integrated within existing coursework. The resulting comprehensive list of knowledge and skills was developed using the concept of the accountant as user, manager, designer, and evaluator of information systems (IFAC 11, p. 15). This paper suggests that the use of industry as a focus for required skills may indicate significant differences in desired competencies between industries. This knowledge will assist accounting programs in deciding which skills to integrate into particular courses or concentrations within accounting to provide more focused study and which skills may apply to all majors and thus should be left in standalone IS courses. Careful integration of IT skills into particular courses of study within accounting would provide a more meaningful linkage between education and the accounting profession.

Research Process

During spring 2003, researchers and students in a graduate AIS course performed a literature review and constructed a telephone survey instrument to identify essential IS and IT knowledge expected of new accounting hires (see Appendix). They conducted a pilot study of local businesses as part of their course requirements.

The sample was selected as follows. Companies with more than 50 employees and more than $2,500,000 in revenue were chosen from two major cities in southwest Florida using the online database ReferenceUSA.[1] Local companies were selected to limit long distance telephone charges for students. Smaller companies were not considered since this study targeted employers of accounting graduates and larger companies were more likely to hire specialized majors. CPA firms, banks and non-profit institutions were an exception to this selection method. Major area CPA firms are commonly known and all were included in the sample. The majority of our local banks employ between 20 and 49 people, and were included in the sample. The non-profit group is a convenience sample and was primarily from education. Employers who hire accounting graduates can provide insight into the expected core knowledge requirements for new hires in accounting. The resulting set of approximately 500 companies was sorted by SIC code to identify major industry groups. Over 100 of the largest companies with local hiring authority by industry group were surveyed.

Table 1. Sample Description

Industry	Number of Companies	Employees		Sales (in millions)	
		Minimum	Maximum	Minimum	Maximum
Banks	10	20	99	$5.0	$500.0
Construction	31	50	499	5.0	500.0
CPA Firms	15	5	49	.5	5.0
Hospitals/Physicians	13	50	4,999	2.5	500.0
Hotels (hospitality)	12	50	4,999	2.5	50.0
Manufacturing	10	50	249	5.0	50.0
Nursing Homes	15	50	999	2.5	50.0
Retail	9	50	999	5.0	375.0
Non Profit (primarily education)	9	50	499	na	na

na – some non-profits interviewed were subdivisions with no income.

 The purpose of this first phase will be to not only gather preliminary data, but to use the results to improve the survey and help construct a concise, comprehensive survey understandable to business managers. The revised survey will be administered to a national sample to determine relevant IS/IT knowledge and skills for business college graduates of all majors. In the next phase of the research, industry and academic representatives will be surveyed on a national level. Finally, we will compare the expectations of industry, and research and academic representatives. In addition, skills identified by particular industries can be connected to relevant courses within programs.

Student Impact

This project served as an excellent introduction to the research process for the students in a graduate AIS course. In addition, the students used this project to enter a student research competition, which resulted in a poster presentation at the annual "Research Day" event at Florida Gulf Coast University. To prepare the students for their role, several representative IS research papers were first reviewed in class using *Evaluating Research in Academic Journals* (Pyrczak 1999) as a guide. The text is described as a technical guide to realistic evaluation and provides basic evaluation guidelines for qualitative and quantitative research. Pyrczak provides a checklist of evaluation questions that can be photocopied and used by students to structure the review process. The text includes guidance on evaluating literature reviews, samples, instrumentation, results and discussion and was well received

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[1]ReferenceUSA is an electronic database of over 10 million businesses.

by the class. The text distinguishes between evaluation of samples when researchers generalize and when they do not generalize, which was useful for this project. The text also includes an appendix on examining the validity structure of qualitative research.

After learning more about the research process, the class discussed the research question at hand. Students were provided background information on AACSB requirements and a brief history of the position of IS in business curriculums. The authors prepared a survey questionnaire for the students to review. The resulting class discussion was most revealing. Although all but one of the students had two introductory courses in information systems at both the graduate and undergraduate levels in addition to an undergraduate AIS course, many of the topics were totally unknown to the students. Although we were disappointed at this, it was not unexpected. It has been noted that introductory IS textbooks have changed little over the last 30 years and are, for the most part, boring; few introductory courses are any better (Avison 2003).

The students felt also that many of the concepts were not readily understandable for a manager. The survey was edited by the students and also annotated for use during the interview process clarification. Since the students would be contacting the employers, the students wanted to be very clear on the meaning of the concepts they were asking about.

The literature search was performed by the authors and the resulting papers were assigned to students to read, review and present to the class. Although students performed a literature search, the search did not result in any additional relevant papers. Following class discussion of the papers, an outline summary of the literature review was prepared by the students for the poster presentation. Over the next two weeks, the students called the employers, collecting and summarizing responses, and draw conclusions. The information is expected to provide the foundation for a comprehensive instrument for a national survey. More importantly, after intensely researching, evaluating, and explaining IS concepts for several weeks, we expect the students to have achieved a working knowledge of basic IS concepts that all business students should know, and also be aware of IS as a discipline with a dedicated body of research. To assess student understanding of the position of the IS discipline in relation to the accounting field, students were asked to write an essay describing the relationship between IS and AIS.

Contribution

Although studies have been conducted of IS curricula and of skills and knowledge employers seek in IS majors (Gill & Hu 1999; Lee, Trauth and Farwell 1995; Simon and Wang 1999), little empirical work has been done to identify what IS knowledge beyond specific packages business majors need in the workplace. This study is the first in a research program to systematically assess industry needs in order to determine the role of information systems education in the undergraduate and graduate business curricula. This study will also help determine which IS knowledge and skills are best incorporated into courses within the major and which skills are best left within standalone courses. We also hope to learn more about student perceptions about the relevance of IS to their careers. This preliminary information should prove to be helpful in further study.

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Appendix: Survey Instrument

I. **On a scale of 1-5, 5 being the most important and 1 being the least, how important do you consider knowledge about the following? If you feel the question is irrelevant, please say so. (if needed, explanations are in italics)**

1. **Telecommunications concepts**
    *   *Concepts involving transmission of digital data, voice, fax, sound and video*
2. **Hardware**
    *   *PCs, minicomputers, large processors*
3. **Software**
    *   *Operating systems, applications programs*
4. **Computer Networks**
    *   *Group of computers and associated peripheral devices (printers, fax, scanners)*
5. **Intranets**
    *   *An internal private network using web technologies to facilitate secure transmission of information within an organization*
    Extranets
    *   *An extranet is an extended intranet. It enables 2 or more companies to use the Internet to do business*
6. **ECommerce or Ebusiness (same)**
    *   *The use of information technology to support business*
7. **Database management systems**
    *   *A software application that interacts with data in a database (Access, Oracle are DBMSs)*
8. **Transaction processing systems**
    *   *A class of information systems designed to process business events and transactions*
9. **Decision support systems**
    *   *Special purpose systems designed to support organizational decision making; typically used by managerial level employees*
10. **Designing information systems**
    *   *Systems analysis and design; part of the systems development process. Analysis of business process and design of computer systems to support process*
11. **Implementing information systems**
    *   *Transforming a systems design into a working information system*
12. **Systems security and privacy**
    *   *Issues related to privacy, viruses and security software*
13. **Ethical concerns related to information systems & information technology**
    *   *Information privacy, information property issues*

II. **What software applications do you prefer your applicants to know?**

III. **Is there anything more that you would like to add?**