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Do the Skills of Non-IT Business Graduates Overlap with Those of IT Specialists?

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Abstract

Given questions surrounding the skills portfolio for IT professionals, this study investigates the types of IT-related skills that non-IT business graduates use in their early careers. The relative importance of these skills for non-IT specialists can indicate areas in which specialist IT personnel are required and can assist IT-educators of both specialists and non-IT specialists in focussing their curriculum design.

Introduction

Advances in technology and changes in the role of the IT function within organizations raise questions about the skills that IT professionals must possess. One factor that is often neglected in discussions of the necessary skills of IT professionals is the growing familiarity and proficiency in IT of non-IT specialists. Graduates of business disciplines such as Accounting and Management often study one or more units in information systems / information technology (IS/IT). When they commence employment, these graduates can use their knowledge of IS/IT to take on limited roles in developing and managing information systems - roles that have traditionally been in the domain of the IT professional.

In this research we consider the skills required by IT professionals in an indirect way, by investigating the types of IT-related capabilities that business graduates who do not have an IT specialisation require. We aim to discover the relative importance of the IT-skills that these graduates perceive they use in doing their jobs. By doing so, we can investigate overlapping (or converging) areas of IT-related skills between business graduates who do not have an IS/IT specialisations and the required skills of IT professionals. These findings will indicate directions for IS/IT education for both specialist and non-IT specialist graduates.

Background

Information systems are increasingly developed, used and managed by end-users within functional departments. User led developments are common and the role of the IS organization has changed from that of being the proprietor of information systems and products for an organization,

to that of a service provider to end users. With the emergence of this IS environment, there have been many calls for IS professionals to move away from being purely technical experts providing solutions, towards acting as change agents supporting the integration of IT within business processes (Lee, Trauth et al., 1995). The types of skills that IS professionals need to develop in this changing environment are frequently seen as those related to interpersonal relationships and communications (Trauth, Farwell et al., 1993) and knowledge of business functional areas (Lee, Trauth et al., 1995). Todd et al. (1995) provide an alternative perspective of the skill requirements of IS personnel by suggesting that, because end-users are becoming more competent in information system development and management, IS professionals should maintain a specialist technical focus to provide technical support when their specialist IS expertise is required. Both of these perspectives are suggested responses for IT professional development based on the growing sophistication of end users.

Observing this trend towards end-users being less reliant on IS professionals, McLean and Kappelman (1993) suggest that there is a convergence between end-user computing and corporate computing. While it is still normal for end-users to get services from IS personnel, they frequently take on the IS unit's traditional responsibilities for the planning and implementing of new technology. As well as having educational implications for IS professionals, this decentralization of IS activities also affects the abilities that end-users require in order to develop, use and manage information systems.

There is little doubt that the abilities required by personnel involved in developing and managing IS have changed. Markus and Benjamin (1996) suggest that in the future IS professionals will perform a mixture of facilitator and advocate roles rather than the traditional guardian and supplier of technical wisdom. They suggest that IS professionals must move towards this new paradigm and outline key features of education that would support this trend. This is confirmed by the ongoing detailed work in specifying appropriate courses of study for IS professionals by academic committees and professional organisations in the IS community (ACM, AIS et al., 1997; ACS, 1997; IRMA and DAMA, 1997). Curriculum recommendations such as these typically

identify core areas of knowledge required by IT specialist graduates and there is a high degree of overlap between those recommendations developed in the United States and those developed in other parts of the world such as Australia.

Research Questions

At tertiary levels, Information Systems is taught in a variety of differently named faculties (Business, Commerce, Computer Science, MIS etc.) and in each institution the focus of what is taught differs to reflect the objectives of the specific academic environment. Courses can be roughly divided into those for IS/IT specialists and those for accountants, managers and economists for whom IS/IT is a basic tool but not their primary area of expertise. Although students graduate from many sources they all enter the same job market and face similar demands regardless of the idiosyncrasies of the coordinators who determined the content of their IS/IT courses. By addressing graduates who have not had a specialist IT education, this research aims to discover which IT-related capabilities they find relevant to their work. In doing so, this research will identify areas of IS/IT work that are either exclusively or partly the domain of IT professionals and make suggestions as to how the education requirements of both IT and non-IT specialists can complement each other.

Research Methodology

There have been few studies that have systematically investigated the match between what is taught in universities and the IS/IT skills that are required during the first few years of working life for business graduates without an IS/IT specialisation. The main reason for this dearth of research lies with the difficulty in measuring of the level of knowledge/capability/skill required. We focus on the early careers of graduates because we believe that as their careers progress, other factors such as in-house training are likely to confound efforts to measure the relative importance of IS/IT skills.

To investigate overlap between the IS/IT skills on non-IT specialist business graduates and IT-specialist graduates, we have developed a set of questions that represent the necessary skill capabilities of IT professionals. Using three currently accepted standard curricula (ACM, AIS et al., 1997; ACS, 1997; IRMA, 1997) and a review of relevant IS/IT literature (Nelson, 1991; Leitheiser, 1992; Lee, Trauth et al., 1995; Todd, McKeen et al., 1995; Tye, Poon et al., 1995), a set of capabilities were extracted and reworded as necessary to allow non-specialists to understand the terms used. An early form of this instrument was used with graduates

from a single year with some valuable results for the development of the instrument. A combination of reliability testing and factor analysis led to the refinement of sixty-seven items in fourteen groups of capabilities. The group factor labels are given in the first two columns of Table 1 with an example question. These groups of capabilities represent a range of technical and non-technical skills that is applicable to both specialist and non-IT specialists alike. Each question in the survey is answered on a seven point Likert scale anchored with the phrases 'of no use' and 'of absolute necessity'. There is a further column labelled 'unknown' to capture the response of those who do not understand the question for whatever reason.

Results and Proposed Analysis

The survey instrument was administered to Commerce and Computer Science graduates who completed their studies in the years 1996-1998. One hundred and eighty-one useable responses were received representing a 22% response rate. Respondents were employed primarily in Australia and several South East Asian countries such as Singapore, Hong Kong and Malaysia. Each response was classified according to one of eight employment categories including Accounting/Finance, General Management, IS/IT Development and Support, and Business Analysis. The last two columns of Table 1 show the mean importance of each IS/IT capability factor for the Accounting/Finance and IS/IT Development and Support categories.

As can be seen from this preliminary analysis, for Accounting/Finance personnel and IS/IT development personnel, there is no significant difference in the perceived importance of the capabilities that are traditionally in the domain of general business. However, beyond the use of personal computing software, it appears that personnel in Accounting/Finance do not perceive capabilities that are traditionally in the domain of IT professionals to be particularly important in their jobs. One tentative suggestion from this finding is that while IT professionals are embracing capabilities that are in the general business domain, graduates from non-IT backgrounds employed in traditional business positions do not see their roles extending into the domain of IT professionals.

A full analysis of the data will be presented at the conference investigating whether or not there are significant differences in the capabilities required by each group. Where significant differences in capabilities are found, the implication is that it is in these areas that the necessary capabilities are not converging. Given this analysis, suggestions for IS/IT education will be advanced.

Table 1 - Survey Instrument Item Factors

Capability Factors		Mean Factor Importance	
Factor	Example Question	Accounting /Finance	IS/IT Devlt. & Support
Communication	Observe, note and explain events	5.46	5.36
General Management	Apply concepts of continuous quality improvement	4.27	4.40
Interpersonal	Work with people of diverse backgrounds	5.10	5.18
Problem Solving	Devise questions that will identify problems	4.99	5.46
Personal Professionalism	Articulate a personal position	5.73	5.68
Ethical Issues	Assess organisational and societal impacts of an IS	4.20	3.99
Personal Computing Software	Use word processing software	4.84	4.75
Information Technology Concepts	Recognise the functions and components of networks	3.90	5.78
Interface Between IS and General Business	Fit IS policies and plans with the goals and objectives of the organisation	3.49	4.36
Information Systems Support	Maintain and enhance existing IS for corporate use	3.68	4.62
Systems Installation and Integration	Install and integrate purchased information system solutions	1.92	3.59
Programming	Formulate queries to access data using SQL	1.56	4.11
Information Systems Design	Select and apply information system design methodologies	1.85	4.06

Information Resource Management Association. "IRM Curriculum Model", Hershey, PA, Information Resource Management Association, 1997.

Lee, D. M. S., E. M. Trauth and Farwell, D. "Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic Industry Investigation." *MIS Quarterly* September, 1995, pp.313-336.

Leitheiser, R. L. "MIS Skills for the 1990s: A Survey of MIS Managers' Perceptions," *Journal of Management Information Systems* 9(1), 1992, pp 69-91.

McLean, E. R. and L. A. Kappelman "The Convergence of Organisational and End-User Computing," *Journal of Management Information Systems* 9(3), 1993, pp. 145-155.

Markus, M. L. and R. I. Benjamin "Change Agency - the Next IS Frontier," *MIS Quarterly* December, 1996, pp 385-407.

Nelson, R. R. "Educational Needs as Perceived by IS and End-User Personnel: A Survey of Knowledge and Skill Requirements," *MIS Quarterly* December, 1991, pp. 503-525.

Todd, P. A., J. D. McKeen and Gallupe, R.B. "The Evolution of IS Job Skills: A Content Analysis of IS Job Advertisements from 1970 to 1990," *MIS Quarterly* March, 1995, pp. 1-23.

Trauth, E. M., D. W. Farwell and Lee, D. "The IS Expectation Gap: Industry Expectations Versus Academic Preparation,," *MIS Quarterly* September, 1993, pp. 293-303.

Tye, E. M. W., R. S. K. Poon and Burn. J. "Information Systems Skills: Achieving Alignment Between the Curriculum and the Needs of IS Professionals in the Future," *Data Base Advances* 26(4), 1995, pp. 47-61.

References

Association for Computing Machinery, Association for Information Systems. "IS '97 Model Curriculum Guidelines for Undergraduate Degree Programs in Information Systems", Association for Information Technology Professionals, 1997.

Australian Computer Society. "The ACS Core Body of Knowledge for Information Technology Professionals", Sydney, Australian Computer Society, 1997.