Chapter VII
Curriculum Change and Alignment with Industry:
The Student Perspective

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ABSTRACT

This chapter presents the design and results of a study that focuses on students as stakeholders in the education process. A general framework based on a nomological net is introduced and used to derive the research models underpinning data gathering and the subsequent data analysis. The findings indicate that students realistically evaluate the gaps in their learning but put more emphasis on technical skills, ignoring or undervaluing soft and business skills despite academic efforts to develop these through skill-centered teaching. It was also found that a mismatch existed between student expectations of required skills and skills demanded by employers, to some extent exacerbated by the content of job advertisements.

INTRODUCTION

In the last decade the use of the term information technology (IT) has changed as the IT industry itself has changed: "change is the only constant" of the contemporary IT environment (Pedigo & Callahan, 2003). IT is now used to refer to a much wider range of computing disciplines including information systems (IS), computer science (CS), and software engineering (SE).

In the contemporary digital and networked society, communication technologies have become an essential part of the IT landscape and now the information and communication technology (ICT) approach dominates current practice (Chandra et al., 2000; Pedigo & Callahan, 2003). As before, the IT (and IS) disciplines address organisational needs (Shackleford et al., 2005).

The change in the IT landscape leads to a change in the nature of the skills and capabilities required by both beginner and experienced

IT practitioners, especially for recent graduates who have yet to adjust to their new roles in an industry that is in a state of perennial evolution (Leong & Tan, 2004). However, there is a significant difference between the rate of adoption of new technology by academia and industry. The existence of an adoption gap was recognized in CS studies (Bamberger, 1986; Conner & De Jong, 1979; Moore & Streib, 1989). In IS and e-business, the phenomenon was investigated by Chandra et al. (2000) and by Davis, Siau, and Dhenuvakonda (2003). These authors believe that academia lacks the motivation of a "real-life" driving force and therefore tends not to respond automatically to current industry demands.

Typically IT/IS academic programs cover a spectrum of disciplines, some of which were previously referred to as "computing." IT/IS academic curricula have gradually evolved to include the development of skills and capabilities in several broad areas, for example, CS and SE (Shackleford et al., 2004) and e-business (Gorgone et al., 2002). Research in the field of skill and capability building has identified a number of different skill sets serving as curricula focal points. These sets are often qualified as either technical and technological ("hard") or business and managerial ("soft") skills (Litecky, Arnett, & Prabhakar, 2004; Turner & Lowry, 2003). A specific concern addressed in the literature is that undergraduate academic programs still do not produce graduates equipped with the skills and capabilities that industry values and requires as curricula are often too theoretical and out-of-date (Bailey & Stefaniak, 2002; Lee, 2002; Roberts, 2000;).

The difficulties faced by curriculum developers are exacerbated by the trends towards the convergence of technologies that traditionally were grounded either in business or in software systems (Shackleford et al., 2004). The inclusion of e-business/e-commerce in the IT/IS curriculum (Gorgone et al., 2002) presents an additional complication as it focuses on the virtual enterprise (Nayak, Bhaskaran, & Das, 2001) and on the integration between front-end e-commerce capability and back-end IT infrastructure (Zhu, 2004). To address the resulting complexity, a variety of "business cum technical courses" have been developed (for example, Lei, Mariga, & Pobanz, 2003; Ramakrishnan & Ragothaman, 2001).

In order to identify the IT skills that organizations require of their employees, academics have collected and analyzed data gathered from the workplace, from academic programs themselves, and from job advertisements and have investigated employer and student expectations. Three skill categories have been identified as a result. For example, Lee, Trauth, and Farwell (1995) who predicted an increase in business/systems analyst and end-user support jobs, recommended academia consider graduate outcomes that incorporated interpersonal, management, and technical skills. Leitheiser (1992), who studied employer expectations, identified a similar set of skills (technical, interpersonal and business) as being important for systems analysts. Similarly, in Bailey and Stefaniak (2002) and in Chilton and Hardgrave (2004) the emphasis is on the importance of interpersonal (soft) and management/business skills, as well as on technical (hard) skills.

Research over the years has continued to identify the different emphasis put on these skill categories. Ng Tye, Poon, and Burn (1995) in Hong Kong, and later, Lee, Koh, Yen, and Tang (2002) in a literature survey highlighted the importance of soft skills. Lee et al. (2002) reported that IS practitioners considered interpersonal skills more important than IS academics did. They recommended that "IS academics need a directional change to place more emphasis on nontechnical areas such as interpersonal skills" (p. 60).

In a further study of IS business schools and IT companies, Yen, Chen, Lee, and Koh (2003) found that academics rated technical skills more highly than IS practitioners did. Conversely, IS practitioners rated interpersonal and organizational skills (including teamwork, written and oral communication) higher than academics did.

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