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REDEFINING THE MIS CURRICULUM FOR THE IT OFFSHORING PARADIGM

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ABSTRACT

IT offshoring has been a driving force in reshaping IT-related business globally and in creating new challenges and opportunities for IS education. This paper examines the emerging IT offshoring paradigm and its impacts on IS education and proposes a reference IT offshoring curriculum.

Keywords: IT Offshoring, Employment, IS Education, Curriculum

IT EMPLOYMENT IN THE OFFSHORING ERA

Information Technology (IT) offshoring is the migration of IT-related business activities and the associated employment from a home country—typically a developed nation such as the United States—to other parts of the world, especially low-wage countries such as India and China. Since the 1990s IT offshoring has been unprecedentedly facilitated and accelerated by information technology and business globalization to the extent that has never existed in the economic history, though the pursuit of cheaper economic resources underlies centuries of human economic activities [8, 10].

The offshoring literature has addressed a wide range of issues such as its impact on GDP, inflation, trade, consumers, productivity, wages and employment. Forrester Research [4] provides, perhaps, a most widely cited job impact number. It estimates that 0.83 million US service-sector jobs went offshore by the end of 2005 and 3.3 million will leave the US by 2015. The US GAO [7] concludes that offshoring will hurt IT employment growth in the next decade. A number of studies examined offshoring employment impacts on the IT sector, using varied methodologies and definitions of offshoring, as summarized in the Table 1.

Table 1. Estimated Offshoring Employment Impacts on the IT Sector

Author	Estimated Annual Employment Losses	Methodology
Forrester [4]	50,000	Survey
Global Insight, Inc. [6]	34,000	Micro-simulation
Schultze [14]	52,000-72,000	Import flows
Bardhand and Kroll [2]	500,000	At risk
Bhagwati and others [3]	65,000	Job growth in India, Ireland, Philippines

These estimated figures represent a small magnitude in the context of the whole economy. For example, Bureau of Labour Statistic's Business Employment Dynamics (BED) series shows that the US economy creates and destroys millions of jobs each year: 7.9 million job gains and 8 million job losses in 2002. The number of U.S.-based employment in the U.S. multinational companies is 23.45 million in 2001 [13, 7].

However, it is the rate of offshoring growth that is very rapid. For instance, data from the software industry in India show that software workers in India serving foreign clients doubled from 235,000 in 1999-2000 to 530,000 in 2003-04. Employment growth in business services was even faster, from 42,000 in 1999-2000 to 245,000 in 2003-2004 (NASSCOM, as referred to in WTO 2005, p.301, cited from Sako, 2004) [13]. Most executives at the Fortune 1000 companies expect their companies to increase offshoring in the next five years, based on the results form Jones Lang LaSalle's [2004] survey of top corporate real estate professionals at primarily Fortune 1000 companies (as referred to in Rutherford and Mobley, 2004) [12]. The survey also shows that IT-related functions are expected to be most offshored, as indicated in the Figure 1.

For the following functions, indicate whether the amount of outsourcing and offshoring you do for each is likely to increase, decrease or stay the same over the next five years.

	Increase	Decrease	Stay same
OUTSOURCING			
Call/contact centre	47.8%	4.3%	47.8%
Back office, including accounting, finance and human resources	52.2%	4.3%	43.5%
Manufacturing, logistics and distribution	26.3%	5.3%	68.4%
Information technology, research and development, software development and programming	52.2%	8.7%	39.1%
OFFSHORING			
Call/contract centre	78.8%	0.0%	21.2%
Back office, including accounting, finance and human resources	64.5%	0.0%	35.5%
Manufacturing, logistics and distribution	30.4%	8.7%	60.9%
Information technology, research and development, software development and programming	77.8%	2.8%	19.4%

Figure 1. Trends in Offshored Functions
(Source: Rutherford and Mobley, 2005, p. 89)

Garner [5] suggests some characteristics of jobs that are more likely to be outsourced abroad. They are of labor-intensive, information-based, codifiable, high degree of transparency in the information to be transmitted between the supplier and the customer.

Serapio [15] identifies the different types of offshored IT work (listed in Figure 2) in his recent study on offshoring activities by IT firms in Colorado, which is ranked first among the 50 states in concentration of high-tech workers.

IT offshoring has significant impacts on the way jobs and professions in IT areas are packaged and that task changes within jobs have been quite large [9, p.52]. For example, as IT services became outsourced, IT professionals are expected to have the 'front-office' managerial skills in procurement, finance and accounting, etc. as well as their technical IT knowledge [13].

Type of Work	Percentage of Companies
Internal IT maintenance, support and consulting (mainframe, hardware, software support).	41
IT applications/software development for internal use, including testing, development and quality assurance.	27
Web development (for internal and external use).	27
Enterprise resource planning system development.	19
Development of software for external/customer use, including new product development.	45
Specialized projects (e.g., Y2K, localization, customer support, etc).	41
IT consulting and services (external).	19
Research and Development.	10
Others.	18

Figure 2. Type of Work being Offshored by 22 Companies in Colorado (Source: Serapio, 2005, p. 7)

IT Education in the Offshoring Era

It is clear that IT offshoring from the US will continue unabated and traditional low and mid level IT jobs will continue to migrate away from the US to low-wage countries such as India and China.

This means that IT functions in US firms will change drastically in terms of their tasks and skills. There will be great new demand for IT offshoring management such as contract and risk management, technology and project management, vendor

assessment and relationship management, networking and systems integration, integrated business and IS strategic planning [8, 10].

The changes required are more than "just updating methods to deal with evolving technologies" and "more substantial than those with which we are familiar." Essentially, "outsourcing/offshoring must be treated as a major and central IS paradigm" [8, pp. 3-4].

Our IT education system needs to better respond to the IT offshoring challenge and catch new educational opportunities toward the high-end in IT areas.

Redefine MIS Curriculum for the IT Offshoring Paradigm

The authors have examined the most recent ACM/AIS [1] model curriculum for information systems and the current curriculum at the 19 top nationally 2006 ranked undergraduate business programs in MIS (see Table 2) [16]. The finding is that overall there is no reflection of new courses demanded by the IT offshoring paradigm.

Table 2. 19 Top Nationally Ranked Undergraduate Business Programs in MIS [16]

1.	MIT (Sloan)
2.	CMU (PA)
3.	University of Texas-Austin (McCombs)
4.	University of Arizona (Eller)*
5.	University of Minnesota-Twin Cities (Carlson)
6.	University of Maryland-College Park (Smith)
7.	University of Michigan-Ann Arbor
	University of Pennsylvania (Wharton)
9.	New York University (Stern)
10	Georgia State University
11.	University of California-Berkeley (Hass)
12.	Indiana University-Bloomington (Kelley)
13.	Bentley College (MA)
14.	Purdue University-West Lafayette (Krannert) (IN)
15.	Arizona State University (Carey)
16.	University of Georgia (Terry)
	University of Oklahoma (Price)
	University of Virginia (McIntire)
19.	University of Washington

To respond to the call for a new IS education paradigm created by the IT offshoring [e.g., 8, 10], we drafted a reference curriculum for an IT offshoring management track in an MIS framework, to cast a brick to attract jade. In other words, to cast a brick refers to revealing a rudimentary idea while hoping to attract jade, that is, to invoke more refined ideas from further discussion or through other devices.

The curriculum is constructed as a set of three interrelated building blocks: a common major core and two sets of required and elective courses in IT offshoring, beyond the general requirements for all majors at a business school, as depicted in Table 3.

Table 3. A Reference Curriculum for IT Offshoring Management

Common Core for MIS Major	**IT Offshoring Track Required Courses**	**IT Offshoring Elective Courses**
Management Information Systems Computer Programming Database Management Systems Networking Systems Analysis and Design Project Management Systems Security	IT Offshoring Management Vendor Assessment Negotiations & Contract Management Risk Management Business & Systems Integration IS Strategic Planning	International Business Supply Chain Management E-Business Enterprise Systems Web Services Accounting Information Systems Finance Information Systems Cyberlaw and Cyberethics Advanced Topics E-Business Internship

As King [8] suggested, some of the above areas involve skills that go well beyond the traditional domain of IS education, and there will need to be a period of substantial retraining or joint teaching of IS courses with non-IS faculty. In whatever way, "IS education must adapt and change" [8, p. 4].

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