Evaluation of Mechanisms for Globalizing Information Systems Programs

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As US businesses continue to grow their international presence, they need professionals who understand the practices in other parts of the world. This is most applicable for Information Technology and Information Systems related professionals who frequently communicate with vendors and clients outside the US. Research establishes that US educational programs in information systems and technology would be strengthened by enhancing student and faculty knowledge of technology deployment models and business practices as well as the culture and customs in other parts of the world. This Delphi study surveyed faculty and students to investigate more effective mechanisms to accomplish this goal.

INTRODUCTION

Different IS programs fulfill different missions and serve different student populations (Avgerou, 2008; Ceccucci et al., 2008). There are significant differences between the baccalaureate IS programs that are currently offered; therefore, it is difficult to speak of a generic IS baccalaureate degree (Gorgone, 2006; Reichgelt et al., 2004). For the purpose of this article, all information technology (IT) related programs housed in the College of Business, including information systems (IS) programs will be referred to by a common title of Information Systems (IS). A recent study from international accreditation body Association to Advance Collegiate Schools of Business (AACSB) highlighted the immense challenges before business schools in today's increasingly global and competitive business world asserting that business and society require graduates with global competencies (Stephens et al., 2001; Zammuto, 2008). Bloomberg Businessweek ranking of undergraduate business schools endorses this assertion; while the methodology used to rank the top undergraduate programs was based on measures of student satisfaction and academic quality, international exposure and experience were prioritized by all the top-ranked schools.

REVIEW OF LITERATURE

IS educational programs in the US grew rapidly in the last decade, to fulfill employment needs of businesses, both big and small that embraced the Y2K update followed by a burst in online applications (King, 2005). The offshore model came of age due to the urgency and necessity of Y2K, when numerous offshore IT companies were hired to assist in the massive enterprise of updating critical system code (Weber, 2004). In a Delphi study on offshore outsourcing, the author observed that the practice of exporting IT work has grown manifold, both in terms of labor volume as well as diversity, depth, and complexity of projects undertaken, and management of these outsourced IT projects has become very critical to project success (Gokhale, 2007; Wolk, 2008).
In the last decade, research studies have identified a link between student employability skills and international experiences. Employers are increasingly looking for graduates who have had an international experience (Dar et al., 2006; Stanek, 2000). Although the outsourcing of business processes and operations around the globe has blurred the boundaries of enterprise computing, IS applications are most effective when the systems are tailored to the needs of the local community in which they will be used (Buckley et al., 2004). In addition, working in multicultural teams has become inevitable for businesses with worldwide operations (Kvasny, 2006).

**Effects of Global Economy on IS Education**

The Association of American Colleges and Universities studied desired student learning outcomes of an undergraduate education, and published a table that was drawn together from a variety of sources: the standards of regional and specialized accreditation agencies from across the country, best practices articulated by educational associations, qualities sought by employers, and contributions of faculty and administrators at various colleges and universities (Wergin, 2005). The table demonstrates a widespread and growing consensus; two relevant outcomes include: 1) Intercultural knowledge and collaborative problem-solving skills, and 2) Integrative thinking and the ability to transfer knowledge from one setting to another.

In a global economy, it is no longer sufficient for a state to compare itself with the state next door; the comparison is against world standards. Investments in IS education need to benchmark best practices wherever they are found. More and more universities seek to pursue agreements for collaborative programs with international partners to nurture certain essential qualities that will give their graduates an edge in a fast-changing global economy. Global education implies that students are educated across disciplinary and geographical boundaries — beyond the content knowledge of a particular discipline in a specific country (Hatakenaka, 2004). Benefits go far beyond academic learning — enabling students to develop broader perspectives on their academic field of study and an ability to develop skills in cross-cultural communication, adaptability, and critical thinking applicable to everyday life (Stier, 2003). Colleges and universities are encouraged (and sometimes mandated) to find ways to introduce their students to diverse racial, ethnic, and cultural situations and learning, but most educators know little about education in other countries (Fuller et al., 2005).

**Status of Globalizing IS Programs at US Institutions**

In this era of globalization, internationalization — both as an idea and an agenda — is receiving widespread attention at academic institutions across North America (Dewey et al., 2009). Although faculty are necessarily key participants in initiatives to internationalize academia, surprisingly little work has been published that addresses the roles, responsibilities, and problems faced by the faculty on an operational level. The three main ways in which an international dimension is typically added to student learning are student and faculty exchanges, joint projects involving in-person or virtual collaboration, and study abroad. There is wide variety of international experiences which fall under the general category of study abroad programs; these include: summer or semester abroad, dual-degree, short immersive experience in a foreign country, internship in a foreign country, and course taught by foreign faculty.

**Status of Globalizing IS Programs at Institutions Outside the US**

A Dutch study which found a large increase in the provision of internationalized curricula over the last ten years, largely in economics and business studies, the humanities, and social sciences (Stronkhorst, 2005). They include curricula with international subjects, curricula with international comparative approaches, and interdisciplinary regional and area studies. The study also examined the process of internationalizing the curriculum and concluded that it is lengthy and complex, that individual academics play a vital role, and that it requires support from a combined bottom-up and top-down strategy that is consistent with the institution's policy on internationalization.

The international IS literature includes an increasing number of studies of IS innovation experiences in other regions of the world, mainly the developing countries of Asia, Africa, and Latin America.
Although there are many researchers that present case studies of internationalization processes, there is little work that evaluates programs across institutions (Hatakenaka, 2004; Joseph et al., 2006; Reichgelt, 2002; Von Konsky et al., 2006). There is need for a study that researches multiple universities and focuses on mapping internationalization for IS majors, addressing barriers to internationalization, and improving structures and systems to enhance internationalization in IS-related academic departments. A critical analysis of internationalization mechanisms will benefit institutions that seek a framework for navigating diverse tensions and responsibilities implicit in an internationalization imperative (Voogt et al., 2008).

PURPOSE OF THE STUDY

The purpose of this study is to assess international academic experiences of students and faculty and determine most effective mechanisms for enhancing global education for IS-related majors. The study was limited to US students and faculty with experience in an academic environment in Asia, because Asia is significantly diverse with respect to the US culture and educational setting.

The following research questions were developed to establish a basis for the methodology:
1. What are the most effective mechanisms for enhancing global education for faculty in IS-related disciplines?
2. What are the most effective mechanisms for enhancing global education for students in IS-related majors?

METHODOLOGY

The Delphi technique for a qualitative study was used to develop a range of possible outcomes of international experiences and seek out information that generated consensus among respondents. The Delphi study technique is a means of achieving consensual validity among raters by providing them feedback regarding other raters’ responses and, if possible, the reasons for such (Young, 2006). A panel of raters independently completes a rating task; the results are then tabulated and returned to the panel members for rerating (Linstone, 1995). The new results are tabulated, and the process continues until consensus or near consensus is achieved. As panel members work independently and are not in a group setting, group dynamics are not a factor. The Delphi technique is a valid technique for long-term forecasting (Czinkota et al., 2005).

Delphi items are typically broad-based and convergence of medians is effectively achieved in three or four rounds, after which it reaches the point of diminishing returns (Linstone et al., 1995). The role of the researcher is to act as a neutral facilitator when conducting a Delphi study. Much of the popularity and acceptance of Delphi rests on the claim of superiority of group over individual opinions, and preferability of private opinion over face-to-face confrontation (Gokhale, 2001). On the other hand, numerous examples are cited where discussions among participants integrated with the Delphi technique clarified the issues and made honest communication possible (Dillman, 2000).

This study used an anonymous setting in the first three phases to arrive at a meeting of the minds or consensus among the experts. In the fourth and final stage, there was a teleconference followed by a four-day long online discussion which facilitated greater insight into the issues. A questionnaire was developed and utilized as the primary data collection tool. Specific items and lists for particular questions were originally generated by the author. The questionnaire was reviewed by several faculty in international business, IS, and IT programs. This input resulted in revisions to the survey instrument. A pilot test was administered to a representative group of both faculty and students at the author’s home institution, which helped to further refine the instrument.

Population and Sample

The author prepared a list of IS, business information systems, management information systems, or computer systems programs at many major universities and colleges accredited by either Accreditation
Council for Business Schools and Programs, AACSB, Middle States Association of Colleges and Schools, New England Association of Schools and Colleges, North Central Association of Colleges and Schools, Western Association of Schools and Colleges, or Computing Sciences Accreditation Board to identify potential participants. A total of over 90 student and faculty questionnaires were sent to the Chairs of relevant departments with a request that the questionnaire be forwarded to appropriate faculty members and students. The response rate was 23% for faculty and 29% for students. The study probed deeper with an in-depth survey of: 1) 15 students who had spent at least two weeks in an Asian host country in a IS-related program, and received academic credit for that experience, and 2) 15 faculty who had spent at least two months teaching/conducting research/consulting related to IS or IT applications in business at an educational institution or a company in Asia. The students and faculty were selected based on their exposure to multiple international events and activities, even at their home institution.

DATA COLLECTION AND ANALYSIS

There were four phases in this study; three paper-and-pencil questionnaires and one teleconference followed by online discussion in which data was collected in response to a series of questions. The surveys for the two groups of participants – students and faculty – were collected and analyzed independently of each other.

Phase I

The first questionnaire, which appears in Figure 1, asked the participants to identify the international programs in which they participated and rate them on a scale of 1 to 5 regarding their effectiveness in enhancing global education. Next, the respondents were asked to identify the international programs that had proven effective in enhancing their global education and rate each program on a scale of 1 to 5 regarding its chances for successful implementation on a wide-scale at their home institution. They also had the option to provide additional comments.

Phase II

The second questionnaire listed: a) the top ten (by frequency) most effective international programs in general identified in the first phase, and b) the top ten (by frequency) international programs identified in the first phase that had proven effective and had the most chances for successful implementation at the participants’ home institution. The participants were asked to rank order the results of the first round. Also, they had the option to provide comments.

Phase III

The data from Phase II were analyzed to determine various statistics such as mean, median, mode, and standard deviation using SPSS software. A hierarchical cluster analysis was used to identify common sets of rating pairs to propose categories for reaching consensus. The phase III questionnaire used the same statements as the second round, except that only the top five programs (based on statistical evaluation) were identified in each category. The participants were asked if they would like to modify their answers based on the responses of the other participants. Each participant was given the analysis of the data collected in phase II and a list of comments made in the first and second rounds. After conducting statistical analysis, a trend towards consensus was documented at the conclusion of the third phase.

Phase IV

The participants were provided with the results of the third phase after which a one-hour teleconference was held in the fourth and final phase of the study for each of the two groups — faculty and students. This was followed by an online discussion, an open forum that brought together the entire panel so that both faculty and student groups could together discuss an implementation plan to support the strategies. At the end of a four-day online discussion, the group outlined a process for putting in place the
essential elements of a framework to launch international programs that were expected to benefit both faculty and students.

FINDINGS

Data analysis for this study is primarily descriptive. Frequency distributions are used to determine response percentages for various respondent categories. Mean scores and standard deviations provide relative agreement for items and a measure of the degree of consensus for each response.

Tables 1 and 2 give insight into student and faculty perspectives on the effectiveness of various international programs and their perceived chances for successful implementation. Values are means ± standard deviation of evaluations, with 1 being the lowest and 5 being the highest rating. Programs that received mean ratings above 2.5 are reported.

**TABLE 1**

**STUDENT FEEDBACK ON EFFECTIVENESS OF INTERNATIONAL PROGRAMS AND THEIR CHANCES FOR SUCCESSFUL IMPLEMENTATION**

<table>
<thead>
<tr>
<th>International Program</th>
<th>Effectiveness</th>
<th>Chances for Successful Implementation</th>
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<tbody>
<tr>
<td>Internship in a foreign country (minimum 2 weeks)</td>
<td>4.8 ± 0.12</td>
<td>2.6 ± 0.3</td>
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<tr>
<td>Study abroad (minimum 2 weeks)</td>
<td>4.5 ± 0.24</td>
<td>4.3 ± 0.14</td>
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<tr>
<td>Joint research with international students outside the US (communication over internet)</td>
<td>3.1 ± 0.11</td>
<td>2.5 ± 0.22</td>
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<tr>
<td>Joint research with international students at home institution</td>
<td>3.0 ± 0.19</td>
<td>4.6 ± 0.19</td>
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<tr>
<td>Seminars at home institution by an international scholar</td>
<td>2.8 ± 0.17</td>
<td>4.8 ± 0.11</td>
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<td>Take class taught by an international visiting faculty</td>
<td>2.6 ± 0.28</td>
<td>2.9 ± 0.23</td>
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**TABLE 2**

**FACULTY FEEDBACK ON EFFECTIVENESS OF INTERNATIONAL PROGRAMS AND THEIR CHANCES FOR SUCCESSFUL IMPLEMENTATION**

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<td>Internship in a foreign country (minimum 2 weeks)</td>
<td>4.8 ± 0.17</td>
<td>2.8 ± 0.27</td>
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<tr>
<td>Joint research with international faculty (travel involved)</td>
<td>4.7 ± 0.23</td>
<td>2.8 ± 0.11</td>
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<tr>
<td>Teach abroad (minimum 2 weeks)</td>
<td>4.8 ± 0.18</td>
<td>2.7 ± 0.21</td>
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<td>Seminars at home institution by an international scholar</td>
<td>3.7 ± 0.13</td>
<td>4.6 ± 0.12</td>
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<tr>
<td>Joint research with international faculty at home institution</td>
<td>3.1 ± 0.1</td>
<td>4.3 ± 0.14</td>
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 Comments by Faculty
Faculty comments mostly addressed the benefits of international exposure and the value added to teaching and research at their home and host institutions. Sample comments are given below.

"I think it is hard to describe how much I got from going to Sri Lanka. It is so much more than just a teaching experience. Immersing oneself in a different culture makes all the difference!"

"Given the tightening of resources, it is difficult to travel abroad and do research or teach. One might go for a conference for a few days and stay over longer at one's expense but then that does not count as being an 'academic visit'. Overall, traveling abroad for research or teaching is the most effective way for faculty to internationalize their perspectives."

 Comments by Students
Students comments were documented and categorized so representative samples could be identified. Most of the student comments related to non-discipline-based learning, or in other words, learning that occurred from exposure to culture and customs of people outside the U.S. The value of international experiences was cited as being important to career growth opportunities.

"I learned that the United States is not the centre of the universe. Even after interacting with international students here and attending multiple seminars, I hadn't learned half as much as I learned in a week upon arriving in China."

"I learned that my way of life is not necessarily the best. Other cultures although very different have their merits. There is no substitute for self-experience. No amount of classes will help."

"Visiting a foreign country opened up opportunities for me and I will be working in a foreign country."

 DISCUSSION
Overall, both faculty and students were excited to share their perspectives about the value of their international experience. The data show that for both students and faculty, being in a foreign country for studying or teaching, working, or doing research is most beneficial and has tremendous educational value. Based on the participants’ open-ended comments, a major impact of an international experience, even if it is only for two weeks, is increased awareness and appreciation of both the vast and subtle differences in ideas and value systems. Learning about self and others and the development of empathy were cited most often. There was discussion about greater awareness of intercultural sensitivity and diversity.

From faculty perspective, international exposure broadened their perspectives and integrating these experiences into their teaching resulted in a more meaningful discussion of global IS practices. Faculty noted an increased self-confidence and self-efficacy with respect to discussions about business case studies outside the US. Many faculty mentioned that involvement in collaborative international research and scholarship has proven valuable for career advancement. When compared to students, faculty were more positive about having international scholars on campus, they opined that visits by international scholars provide greater opportunities for collaboration.

The faculty observations noted above are supported by literature. A study examined the cross-cultural differences between South Korea and the U.S. in user behavior towards protective information technologies (Dinev et al., 2009). The authors report that cultural factors should be considered when teaching about information security policies, practices, and technologies in global networks where multiple cultures coexist. Classroom discussions by faculty about cross-cultural factors can lead to improved student understanding and help mitigate the risks associated with cultural differences among diverse project teams in the workplace (Krishna, et al., 2004; David, et al., 2008).

From students' perspective 'study abroad' is both highly effective and has the highest chances for successful implementation. Students talked frequently about raised global mindedness. Students mentioned that opportunities for study in international settings may be limited by lack of language proficiency, financial resources, maturity and self-confidence, or the unavailability of comparable academic programs. Internship in a foreign country was identified as being highly effective; however,
students thought that it was very difficult to get paid internships in foreign countries and therefore this mechanism has very low chances for successful implementation. Students noted an increase in internship offers following a significant international experience like study abroad, and attributed those increased employment opportunities to their enhanced cultural-sensitivity and understanding of IS practices in a foreign country.

Students observed that when foreign students study in the US, it is typically because of a shortage of university places at home, because foreign students and their families perceive that they can access more prestigious and career beneficial programs abroad, or because higher degrees or highly specialized subject areas are not available in their home country. These students adapt to the US culture and there is little reason for US students to adapt to their foreign culture. As a result, studying with foreign students residing in the US does not help internationalize US students.

Literature supports the above viewpoints expressed by the students. Clarke et al. (2009) investigated several of the potential intercultural influences of a semester abroad for U.S. students in IS-related majors. The authors found that students who study abroad may have greater intercultural proficiency, increased openness to cultural diversity, and become more global-minded than those students remaining in a traditional campus setting. Additionally, students with international experiences perceive themselves as being more proficient, approachable, and open to intercultural communication. These are critical traits for IS recruiters who seek students who are open-minded, creative, and have willingly explored international opportunities, especially internships (Fuller, 2005). Several studies provide empirical evidence that cross-cultural learning and adaptation from both client and vendor staff leads to compromises and innovations in IT offshore outsourcing project teams (Brannen et al., 2000; Weber, 2004).

Governments strive to achieve a workforce that can function at the cutting edge of the knowledge economy in order to provide sustainable prosperity for all their citizens. Students and faculty need to be prepared to operate in a global environment. For students, the primary personal driver for international learning is career enhancement and broader personal enrichment. Research by the American Council on Education in 2001 suggested that 88% of US students believed that international education would give them a competitive advantage in the workforce (Turlington et al., 2002). A report for the UK’s Higher Education Policy Institute goes even further, stating: international higher education is increasingly seen as a route to good employment (Marshall, 2004). The European Commission funds large schemes to promote collaborative education and research for its member nations.

CONCLUSION

Knowledge has become a critical global commodity; hence, a university needs to measure its educational and research programs by benchmarking itself against leading universities worldwide. Today’s graduates must not only have advanced skills but also a global perspective to be successful in life and work. Information systems and technology is the basic building block for corporate systems everywhere. The career opportunities in IS require students to know both the technology and the business and environment in which they will work. Given the nature of IT — free flow of information that completely blurs national boundaries — the discipline is inherently international but its effective application depends on an understanding of the local culture in which it is being used; students and faculty need to be prepared to operate in this global environment. Organizations need employees who will maintain and enhance business competitiveness in a global, rather than purely local, market.

Economic globalization has obligated quality higher education programs to educate students about issues and practices in other parts of the world. Expanded study / teach abroad programs, international internships, events with global themes, and presence of international scholars on campus are key activities that enhance campus internationalization. Studying abroad in an ethnically diverse environment is an academic, cultural, intellectual and emotional journey that facilitates the acquisition of intercultural competencies as well as personal growth. Universities have much to gain from approaching internationalization and ethnic diversity in an integrated fashion with regards to faculty, students, and curriculum. Faculty who have international experiences tend to weave communication standards, business
practices, telecommunications laws, and ethics prevalent in different countries or continents into the IS curriculum. Student and faculty visits to foreign countries promote cultural understanding, build a learning society, globalize the information society, develop entrepreneurs and help make society more socially responsible.

REFERENCES


Dear Participant:

Please use the following format to identify the international programs in which you have participated and rate them on a scale of 1 to 5 regarding their effectiveness in enhancing global education.

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Use the following format to identify the international programs that have proven effective in enhancing global education and rate each program on a scale of 1 to 5 regarding its chances for successful implementation at your institution. Please provide comments on the back of this page.

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