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Focusing on IS Skills for the Middle and Senior Level Manager: A New Approach to the MBA Core IS Course

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Abstract:

The core information systems (IS) course in an MBA program (the foundations IS course required for all students) is typically one of the hardest to teach. The wide range of student skills and the differing opinions on the content make this course a perennial problem. Who is the target audience? What should be the focus of the course? What is the appropriate course content? What is the proper balance between technical and managerial topics?

To help answer these questions this paper investigates the problematic issues surrounding the core IS course and the current pedagogical approaches. An examination of past studies on IS skills seems to suggest academia should consider redesigning the MBA level core IS course. The paper proposes a new **IS managerial approach** to the course that may better fit the needs of middle and senior managers. This approach differs from previous approaches by making the central focus of the course the skills/knowledge needed by management, particularly general management, for exploiting information technology. A detailed description of a course example following this proposed new approach is provided along with a discussion of the flexibility that this approach offers MBA level IS instructors in achieving various pedagogical objectives. The paper concludes with some limitations associated with the approach and how these limitations can be overcome.

Keywords: MBA core IS course, resource-based view, IS capabilities, IS skills

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I. INTRODUCTION

Discussions in the IS community regarding the foundation IS course (the IS-related course typically taken by all students) has focused on a variety of issues. These include the topics to be covered, the best text and business cases to be used, and the amount of hands-on instruction to incorporate [Desai 2006]. Academics have even questioned if a separate course covering core IS concepts should be required by all students or whether students would be better served by integrating this material into the fundamental courses offered by the other business disciplines [Salisbury et al. 2004]. With the growing number of top business schools eliminating the IS course from the core, it is now more important than ever for IS faculty to do a better job of addressing the needs of industry and distinguishing their contribution with respect to other disciplines, or risk losing control of what is being taught about IS [Shore and Briggs 2007]. Past recommended approaches, short of dropping the course from the curriculum, have included: a systems approach where system theory is the central organizing theme of the course [Salisbury et al. 2004]; a process approach focusing on “how IT and IS are critical to the development of effective processes” [Hershey 2003, p.2]; and a content integrative approach [Silver et al. 1995a] which provides a pedagogical structure unifying various IT concepts that, in the past, has been seen by students as being disjointed.

However, a definitive answer to the key question of which approach is best is still elusive. The answer may not be obvious because a more basic question needs to be addressed first: “what should be the focus of the course?” Desai [2006] recommends that any discussion of core IS course content should be centered on this question. Therefore, this manuscript examines the IS literature in relation to this question, and based on the review, proposes a new pedagogical approach to the core MBA IS course, which focuses on managerial skills related to core IS capabilities.

The paper is organized as follows. First, there is an introduction to the issues surrounding the core IS course. Next, a brief description of current pedagogical approaches follows. Then the empirical research and underlying theories supporting a new approach to the core MBA IS course which focus more on “softer” IS skills is discussed. Following is a presentation of a sample course structure and content based on the new approach; as well as, some observations regarding student satisfaction with the new course design. Finally, a discussion of the limitation of this new approach, especially with respect to the amount of contextual business experience students should have if they are to get the most out of this course design, and suggestions for addressing these limitations complete the paper.

II. CORE IS COURSE ISSUES

The core IS course in the MBA program addresses “what every MBA needs to know about information systems in organizations” [Silver et al. 1995a, p 362-363]. This course is required by all MBA students and quite often it is the only IS course that most MBA students will take. The course is typically sequenced with no prerequisites. Students entering the course tend to be heterogeneous in technical skills, education, prior relevant work experience, and business knowledge. For example:

- Younger students tend to be more adept in their basic computing skills.
- Most undergraduate business majors entering the MBA program have been introduced to fundamental information system concepts during their studies.
- Students with an engineering or computer science background are more technically oriented and are knowledgeable of general system development and design concepts.
- Students with prior relevant work experience tend to understand how IT is being used in their organization, or at least within their functional area.

This diversity in prior knowledge has been hypothesized as reasons for students’ discontent with the course and has been speculated to be directly related to low or bi-modal course evaluations and instructor ratings [Markus 1997]. Students also tend to be heterogeneous in their desired educational outcomes. When asked about the focus of the course, some want personal productivity content, in other words, a tools course. Others want the course to be about the management of technology, and others (sometimes the vast majority of the class) have no idea or opinion of what the course should be about except that it should have something to do with computers. The tendencies are:



- Students not in management positions (especially those coming directly out of undergraduate studies) are looking to develop a set of application skills (particularly database skills);
- Engineers are more interested in the development and design of systems;
- Functional area managers have less interest in the technical aspects of information systems or how they are developed, rather they are more concerned with how these systems can improve the efficiency and effectiveness of their current business processes;
- Senior management and executives are more focused on the return on IT investments and the ability to leverage technology for competitive advantage.

In addition to these issues, students also express concerns that the course will be too technical, geared too much toward individuals with IS backgrounds or career goals (a fear also associated with the undergraduate core IS course [Hershey 2003]), and/or a rehashing of undergraduate IS material. In response to these diverse issues and student concerns several pedagogical approaches have been proposed. These approaches are outlined in the next section.

III. CURRENT PEDAGOGICAL APPROACHES

Most textbook content, and subsequently course content, reflect the guidelines for the Information Systems Foundations course proposed in the MSIS 2000 model curriculum [Gorgone and Gray 2000]; which was subsequently revised in 2006 [Gorgone et al.] and henceforth, referred to as the classical approach. The topics recommended by the classical approach are derived directly from the Information Systems Foundations course outline in the Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems [Gorgone et al., 2003], which in turn closely follows the *Communications of the Association for Information Systems* (CAIS) paper outlining the recommendations by Association of Information Systems' (AIS) task force group [Ives et al., 2002]. The article is the task force's response to the draft of the Association to Advance Collegiate Schools of Business International's (AACSB) Accreditations Standards document. It outlines the task force's findings as to the core concepts essential for all business students' understanding of information systems. While there is no empirical or theoretical basis for the recommended content, the proposal was generated by a forty member panel of distinguished faculty teaching in the area.

A slight variation on the classical approach is the systems approach where system theory is the central organizing theme of the course [Salisbury et al. 2004]. Though originally proposed for undergraduate studies, it has also been used as a model for the fundamental MBA level IS course. Because its basis is the classical approach, the systems approach maintains, to some degree the content prescribed in the Guidelines for Undergraduate Degree Programs in Information Systems for the fundamental IS course. However, the approach suggests focusing more time on information systems and their use in organizations, information capabilities provided by systems, and the constraints and opportunities IT offers for doing business, while de-emphasizing or eliminating such topics as programming languages, object-oriented design and professional career paths for IS professionals. Salisbury's recommendations [2004] are based on survey of 60 IS faculty who influence content in their institution's introductory IS course. Desai [2006] reexamined Salisbury's data and, unlike Salisbury, did not exclude responses having values in the middle of the Likert scale. Desai's analysis tells a slightly different story, showing less than half of the respondents believe more coverage should be given to system concepts. The analysis also shows, with the exception of database concepts, no prescribed topic from the classical approach received a recommended "high" coverage score by more than 50 percent of those surveyed.

Hershey [2003] believed there were several major limitations associated with the classical approach and thus recommended redesigning the core IS course with a business process focus. The new design recommended eliminating, or at least de-emphasizing, many classic IS topics including, but not limited to, systems theory and systems thinking, organization and management of IT, strategic uses of IT, design of information systems, system architectures, the relative merits of different operating systems, managing hardware and software and IT personnel and career paths. The proposed new approach suggests that instructors should focus on business processes and the role that IT has in developing, integrating and improving the performance of these business processes. While no formal empirical study was conducted to validate the effectiveness of this business process approach, anecdotal evidence by the faculty of UNC-Greensboro has shown students to be very receptive to this approach at both the MBA and undergraduate [Hershey 2003].

And finally, the integrated approach proposed by Silver et al. [1995a] is the only approach specifically developed and tailored for the MBA core IS course. Their model, called the IT Interaction Model, was developed to provide the course with a unifying pedagogical structure for integrating various IT concepts. Unlike the previous approaches, this approach does not recommend any particular content, allowing the instructor to select their own topics. However,

given today's textbooks, the concepts covered tend to be similar to those outlined MSIS 2006 Information Systems Foundations course [Gorgone et al. 2006]. Rather, the IT Interaction Model approach suggests that instructors focus on the integration of information systems' features with respect to five key elements of the organization:

1. its external environment
2. its strategy
3. its structure and culture
4. its business processes
5. its IT infrastructure

Grounded in general systems theory, the fundamental theoretical assertion of the IT Interaction Model is that the effects of an information system on an organization emerge over time as they interact. Like Hershey's [2003] process approach, there is only anecdotal evidence from faculty with regard to its effectiveness. In addition to the positive reception of the approach by students, the model is also seen as an excellent tool for case analyses, discussions, and group projects.

So which approach is best? To date there is no theoretical or empirical evidence to provide a definitive answer. But the track record of IS education has not been beyond reproach. Research over the years has reported persistent gaps (from moderate to large) between the IS knowledge/skills that are taught in academia and those demanded by industry [Cappel 2001; Hingorani and Sankar 1995; Khan and Kukalis 1990; Lee et al. 2002; Nelson 1991; Tang et al. 2000; Trauth et al. 1993; Yen et al. 2003].

Therefore, specifically focusing on matching industry needs and IS knowledge taught in academia, this paper will present an alternate approach to the core MBA IS course, hereafter referred to as the **IS managerial approach**. This approach differs from previous approaches in two fundamental ways. First, while the central focus of the previous approaches is the information system and its functionality, the central focus of the proposed approach is the skills/knowledge needed by management, particularly general management, for exploiting information technology. Second, in comparison to former approaches which determine content based on feedback from IS educators, arguments supporting this proposed approach content are based on IS theory and empirical studies relating IS skills/knowledge to firm success. These arguments are provided in the following section.

IV. EMPIRICAL RESEARCH ON IS SKILLS AND KNOWLEDGE

There is little empirical research regarding what IS skills and knowledge are needed by general business professionals for exploiting IT. Rather, most research focuses on what IS skills/knowledge are needed by IS professionals (Table 1 provides a list of the various IS skills and knowledge identified in the literature [Lee et al. 1995; Lee and Lee 2006; Nelson 1991; Todd et al. 1995]). But even this line of research has yet to develop a consensus on what skills are needed by industry, especially with respect to the relative importance of technical, or "hard," skills when compared to nontechnical, or "soft" skills. For example, academics tend to see technological skills and knowledge as being more important, while practitioners place greater importance on organizational and social knowledge and skills [Lee et al. 2002; Trauth et al. 1993; Yen et al. 2003]. In addition to the difference in opinions between IS academics and IS practitioners on the critical IS knowledge and skills, there are also differences in opinion among various groups of industry professionals. For example, empirical evidence shows that IS managers, user managers, and IS consultants each rate the importance of various IS skills and knowledge differently [Nelson 1991]. Further complicating this issue is that research has shown that IS skills vary by:

- experience (entry-level, mid-level, senior) [Abraham et al. 2006; Koh et al. 2004; Lee et al. 2001]
- position (super user, programmer, analyst, project manager, IS manager) [Cheney et al. 1990; Hingorani and Sankar 1995; Khan and Kukalis 1990; Leitheiser 1992; Todd et al. 1995; Watson et al. 1990]
- organizational characteristics (public/private, IT/non-IT, size, maturity, structure, industry, IT environment) [Abraham et al. 2006; Benbasat et al. 1980; Green 1989; Lee et al. 1995; Litecky and Arnett 1994; Young 1996]
- technology characteristics (maturity/emerging, dominant/niche, platform) [Athey and Plotnicki 1992; Litecky and Arnett 1994; Prabhakar et al. 2005; Young 1996]
- geographical area [Athey and Plotnicki 1992; C. Litecky and Arnett 1992]

With increased use of sourcing, global development and virtual teams, the identification of the most important skills will potentially become even more convoluted. Given this diversity, it is not at all surprising that academia has had a difficult time in matching IS education to the needs of today's organizations.

Table 1. Classification of IS Skills/Knowledge		
Major	Minor	Specific Areas
Technical (Hard)	Specialties	Architecture
		Hardware
		Network
		Software
	Systems	Design & Development
		Problem Solving
Non-Technical (Soft)	Business	Environment
		Functional Area
		Industry
	Management	General Management
		IT Management
		Leadership
		Project Management
		Training
	Social	Communication
		Interpersonal/ Teamwork
Self-motivation		

However, even with this diversity, there are some valuable observations that can be gleaned from research on IS skills. As stated previously, the relative need for technical and nontechnical skills varies by level of IT experience and position. Technical skills tend to be far more important for less experienced IS personnel particularly with respect to new technologies [Hingorani and Sankar 1995; Koh et al. 2004]. Interpersonal and communication skills are also highly valued in new hires and IS personnel doing end-user support [Hingorani and Sankar 1995; Watson et al. 1990; Young 1996]. However, as IS professionals gain experience and advance in their careers, taking on positions of systems analysts, IT project managers, and IS managers, nontechnical skills in each area of social, business and management are seen as being more important than technical skills [Khan and Kukalis 1990; Koh et al. 2004; Leitheiser 1992]. These IS professionals spend more time monitoring IS technology trends, understanding the specific business functions and the general organizational environment, and creating a corporate vision for the use of IT for competitive advantage, and thus, may need to rely on their "soft" IS skills more [Lee et al. 2001].

An interesting observation though is that although less experienced IS professionals possess higher levels of technical skill compared to their more experienced IS colleagues [Lee et al. 2001], senior IS professionals do not feel any less technically capable to do their job [Koh et al. 2004], further validating research which shows a shift in desired IS skill sets toward "soft" skills [Lee et al. 1995; Lee et al. 2002; Richards et al. 1998]. It is also interesting to note that general managers are also most deficient in the IS skills related to recognizing the potential of IT, strategizing the use of IT for competitive advantage, and creating the fit between IT and the organization [Nelson, 1991]. Earl and Feeny [2000], based on observations of various CEOs and their ability to effectively leverage the benefits of IT in their companies, found that the successful executives were not "IT-literate" nor "IT-experienced" rather they were "IT-oriented" and "IT-savvy." In other words, these business executives relied more on "soft" IS skills to scan and understand new technologies, create IT-enabled vision of organization's future, and embed IT into the organization's strategy and processes.

Given this evidence, coupled with increased outsourcing of technical tasks to third-party providers and greater internal IS focus toward IT-enabled reengineering, sourcing and governance [Abraham et al. 2006], nontechnical



skills are going to be a larger part of the in-house IS skill set, for both IS and general managers. Therefore, there is strong evidence to support that the “soft” IS skills should be integral to the core IS MBA course. So how does one tie in all these skills into course content? For that, we turn to the capabilities literature.

V. THEORETICAL RESEARCH ON IS CAPABILITIES AND SKILLS

The concept of capabilities and their relationship to firm performance is a central theme of resource-based view of the firm, as well as various derivative theories such as the knowledge-based view of the firm and dynamic capabilities. Scholars have made a distinction between firm capabilities and other firm resources, stating capabilities represent a firm’s ability to transform and use the resources it acquires [Amit and Schoemaker 1993; Teece et al. 1997]. Some IS capabilities include technical skills, IS managerial knowledge, IS development processes and vendor management [Wade and Hulland 2004]. However, Mata et al. [1995], arguing from a RBV perspective, proposed that capabilities associated with IS management were the most likely resources to lead to superior firm performance.

From an IS perspective, there have been several attempts to identify key IS resources, including IS management capabilities, that could potentially lead to superior firm performance. For example, Ross et al. [1996], after surveying top IS executives at 50 firms, identified three key IS assets—human, relationship, and technology. These IS assets deliver business value when effectively managed using three key IS processes—strategically aligned planning, fast delivery, and cost-effective operations and support. A larger set of 30 IS resources, identified as being essential for enabling and sustaining IS innovation within an organization, was compiled by Bhardwaj et al. [1999]. Bhardwaj [2000] later provided empirical evidence that IS resources (specifically IT infrastructure; human IS resources, technical and managerial skills; and IS-enabled intangibles, knowledge assets, customer orientation, and synergy) are associated with firm’s superior financial performance. Wade and Hulland [2004], following from an extensive review of RBV literature in IS, provide a detailed list of various IS related capabilities.

But it is the work of Feeny and Willcocks [1998] that maps IS skills to core IS capabilities. These capabilities are leadership, business systems thinking, relationship building, architecture planning, making technology work, informed buying, contract facilitation, contract monitoring, and vendor development. Feeny and Willcocks propose that their nine core capabilities allowed managers to meet the three enduring challenges of (1) creating a business and IT vision; (2) delivering IS services; and (3) designing of IT architecture necessary for exploiting IT as a key resource. Later, Feeny and Willcocks [2006] put their framework to the test by examining the use and development of these nine capabilities in three firms from 2000 to 2005. They concluded that, in order to be successful, organizations must thoroughly apply all nine capabilities. Further they believe that project management capability (first classified as a general organizational capability) should now be considered the tenth core IS capability due to some distinctive characteristics associated with IS projects. It is this framework that provides the foundation for, and an integration of, the content and structure for this paper’s proposed IS managerial approach described in the next section.

VI. IS MANAGERIAL APPROACH: COURSE STRUCTURE AND CONTENT

The current course structure is based on a 15 week schedule with topics mirroring the nine original core IS capabilities proposed by Feeny and Willcocks [1998] plus the tenth capability of IS project management. The pedagogical format of the class includes the use of business cases, guest speakers and reading from top academic journals written in more of a practitioner voice (*Harvard Business Review*, *Sloan Management Review*, and *Communications of the ACM*). This approach was inspired by Earl’s [2000] recommendation that executives can develop effective IS management skills by studying and learning from the successes (and failures) of other business executives. (See Appendix I for the course outline including suggested readings and cases).

In order to set appropriate expectations for this course, in the first class it is made clear that this is not a hands-on course involving the use of various technologies. Rather, course content will focus on the IS skills and capabilities that general managers need to become a knowledgeable and active participants in IS decisions. To help set the right tone for the semester, the class debates the strategic significance of IS, drawing on a set of readings related to this topic. This packet of readings is assigned before the first class meeting. After a healthy exchange of opinions and “war stories” of personal experiences, most students come to the conclusion that the effectiveness and ultimate impact of IS is heavily influenced by the way IS is managed. At this point the class is introduced to the three enduring challenges (creating a business and IS vision, designing of IS architecture and delivering IS services) that companies must address to successfully exploit IS. These challenges were proposed by Feeney and Willcocks [1998] and represent the three main themes (modules) of the course. Using Feeny and Willcocks’ capability framework, a brief introduction to the course topics, the nine plus one core IS capabilities, and how they correspond to these challenges is provided. To help emphasize that technical skills are not the only skills required, and quite often not the most important skills in a capability area, the class reviews over the level of technical, business and

social skills required by each capability as described by Feeny and Willcocks [1998]. This discussion helps to alleviate fears that the course will be beyond the technical capabilities of the general student.

In Module 1, Creating a Business and IS Vision, content focuses on the *business systems thinking, leadership and relationship building* IS capabilities and stresses the importance of business and social skills in these areas. By examining these capabilities early in the course, students begin to understand both the IS and general manager's role in developing and implementing the IS strategy for the company. The goal is to get students to understand many of the strategic and social issues facing the companies as these companies develop an IS-Business vision. They also see why it is important for them to get involved and to identify areas and opportunities in which they should get involved. This is facilitated by focusing more attention on the business and social aspects of the cases and getting the students to realize the critical skills and knowledge they bring to the IS table as managers. To further reinforce the point of these capabilities, it is suggested that visits are arranged from local high-level IS or business executives who can provide some of their own personal experiences, expertise and insights into these areas.

In Module 2, Designing of IS Architecture, the two capabilities most associated with technical skills—*architecture planning* and *making technology work* are tackled. With respect to these topics, it is important that students understand and appreciate the need to retain and develop a degree of technical expertise. These topics also offer an opportune time to introduce technology concepts relevant to today's business. However, when introducing these technology concepts care must be taken to make sure that class discussion does not revert into a technical seminar or "vendor show" of the latest and greatest technologies. Therefore, the discussion should focus more on the general manager's role in the process. For example, using the Zachman Framework for Enterprise Architecture [Sowa and Zachman 1992] in relation to the *architecture planning* capability, I have the class develop a top-level contextual view of the data (what), function (how), network (where), people (who), time (when) and motivation (why) to support a virtual healthcare provisioning network where virtual teams of doctors work to service patients. I emphasize that system development and planning should first start with key stakeholders getting involved and appropriately scoping the project. During the class discussion, there are often a few students who begin to offer suggestions or opinions about what technology should be used; I rein these students in by again focusing on the Zachman Framework, noting that it's the vision of the key stakeholders that begins the development process and commenting on the amount of planning and design that takes place prior to the selection and implementation of the technology.

The third module, Delivering IS Services (containing the four capabilities: *informed buying, contract facilitation, contract monitoring, and vendor development*) is predominately associated with service provisioning through sourcing relationships. It is important to point out to the students that many of the concepts covered during these class sessions can be applied to the delivery of services by external and internal providers. Using the cases as situational background material, many of the class activities involve dividing the students into several small groups with half the groups taking on one role or position associated with the activity and the other half taking on another or opposite role or position. In one group activity, half of the groups are assigned to be proponents of an outsourcing deal while the other half are assigned to be opponents of an outsourcing deal. The teams must debate their position and eventually come to some resolution. In another activity, half of the groups take on the role of the client and the other half take on the role of an IS services provider. Clients and providers are paired and then engage in a contract/service negotiation exercise which includes establishing service levels, transfer of assets and personnel, pricing, service disputes procedures and performance evaluations policies. A post-review is done to not only evaluate the exercise outcomes by comparing and contrasting the performance of each group, but also to address and comment on social aspects of the process itself. Exposing students to both sides of an issue or position gives them a greater appreciation for and understanding of each party's goals, constraints, and tactics.

The course concludes with the proposed tenth capability of *IS project management*. Understanding that two classes are not sufficient to cover the range and complexity of the topics within IS project management and the fact that our MBA program offers a project management elective, the focus of these classes is on how IS projects differ from traditional projects, how to evaluate the benefits and risks of IS projects and the often neglected social dynamics associated with IS projects. This approach keeps with the overall theme of the course. It is also recommended that towards the end on the semester a visit from another local IS or business executive should be arranged. This invited guest should be one who can discuss their own personal experience with respect to some IS outsourcing endeavor(s) or IS project(s) that their company has undertaken.

The judicious sequencing of the three main themes (vision, design, and delivery) follows a natural progression which helps student learning and understanding. And while capabilities that cross over two or more themes could be assigned differently, experience has shown that the previously identified clustering seems to work best. Capabilities that do cross over major themes allow the instructor an opportunity to reemphasize the major points by reexamining a previous case(s) from the newly introduced capabilities perspective. This can take the form of

additional class discussion, external class assignment or an exam question. There is also an opportunity to revisit the capabilities after a guest speaker visit.

In my course, grading is divided into four components: class case discussions (30 percent), group case exercises (30 percent), module reflections (15 percent) and a final group case report (25 percent). Good class case discussions appropriately relate the lesson materials to the cases, have students relating the lesson materials and case issues to their own experiences, and may even spawn other related questions or topics of interest. Students are graded based on the quantity and quality of their interactions. The group exercises involve various managerial IS tasks and situations. These exercises are designed to get the students more actively engaged in applying their business knowledge and also introduce them to some of the social and interpersonal dynamics associated with IS. While a majority of an exercise grade is associated with the content and solutions developed by the group, part of the grade is associated with the group's analysis and critique of their performance with respect to the social and interpersonal dynamics of the exercise. The module reflections provide students with opportunities to share their own thoughts, insights, recommendation, and comments with respect to the readings, notes, cases, discussions, and activities contained in each module. Students are free to share what they learned, agreed/disagreed with, and/or liked/disliked about the module. While grading is simply done based on satisfactory or unsatisfactory completion of the reflection, students take these assignments very seriously and have provided numerous insightful and meaningful comments. The reflections also provide another check to ensure students understand the important take-aways of each module. The final graded component, the group report, takes the form of a postmortem analysis. The report requires students to tie in appropriate frameworks, theoretical models, concepts and managerial advice given throughout the course in order to identify what management did right, what management did wrong and the lessons learned. Though a typical postmortem analysis would involve questioning several of the key stakeholders, cases from the *Harvard Business School Press*, and other such resources, typically provide enough contextual detail to preclude this step.

VII. EVALUATION OF THE IS MANAGERIAL APPROACH

Though there is strong theoretical and empirical basis for supporting such an IS managerial approach, to date, like most of the proposed approaches to the core IS MBA course, the actual effectiveness of the approach is anecdotal. While students are generally more satisfied with this approach, given that course evaluations are substantially higher than the previous method (based on the classical approach), there is still a significant variance in the level of satisfaction among students. Early informal exit interviews conducted with selected students revealed that students with more work experience were more satisfied with the new capabilities approach. They expressed having an easier time, because of their ability to relate their corporate experiences to the material. Students with little or no work experience found it more difficult to understand the material and thus actively participate. These students also tended to devalue their contribution to class discussions. These findings are consistent with Earl's [2000] observations that while some executives, particularly those with some IS project experience, can become more "IT-oriented" and "IT-savvy" by modeling the behavior of other. While their less experienced counterparts need to first engage in a real IT project in order to gain an appropriate perspective. In addition, the guest speakers were very positive about the course format and on one occasion a guest speaker, during their talk, actually rated their company based on Feeny and Willcocks' [1998] nine core IS capabilities.

These exit interviews also revealed that students coming directly into the MBA from undergraduate programs and those in lower level corporate positions were disappointed with the lack of hands-on application content in the course and felt the course could be improved by having a laboratory component. While some students in senior management positions would like some hands-on application instruction, they felt adding such content to the current format would distract from the overall objective of course. They would rather see such hands-on content offered in another course or as one credit modules. One other interesting observation from the interviews was that the format of the IS course complements what was being taught in their operations course. Given that operations predominately deals with the flow of physical goods and IS with the flow of information goods, these observations were rather insightful.

VIII. LIMITATIONS OF THE IS MANAGERIAL APPROACH

One of the biggest issues associated with this approach centers around the business and managerial experience MBA students should possess in order to not only understand the material but also to be successful in the course. This approach works best for students with about three to five years of business experience. Table 2 show the average years of work experience of the entering 2007-2008 class for Tier 1 and Tier 2 MBA Programs identified by *Business Week*. While the IS managerial approach could work well in most part-time programs, it may be more challenging to implement in some full-time programs where the average level of work experience is low.

Table 2. Average Years of Work Experience for MBA Students			
Program Type	Range		Mean
	Hi	Lo	
Part-Time	9.3	4.0	6.1
Full-Time	8.0	2.2	4.7

Source: *BusinessWeek.com*, Business School Rankings & Profiles, January 2008, <http://www.businessweek.com/bschools/rankings/>

I have personally faced such a challenge over the past few years as a growing number of students have entered our MBA programs directly from the undergraduate ranks. To address this new challenge, I have incorporated various innovations which still make this approach quite viable. For example, I have moved more of the case discussion to online discussion boards. This has not only led to greater depth and exchange of ideas and opinions but also increased the participation by the class as a whole. There is also greater interaction and exchange between students, allowing more of the inexperienced students to ask questions of and receive responses from their more experienced classmates. I have modified some of the group exercises so students can draw on their group experiences as they work on developing their deliverables. For example, the case associated with the lesson on architecture planning is on a virtual team of doctors. To get students more in touch with the technological, social, interpersonal and communication issues associated with virtual teams, the modified task now requires them to work in groups as virtual teams developing and delivering a presentation online (using Adobe Connect) on the various issues and challenges of implementing a virtual medical service. And finally, I now require all module reflections to be posted to the course Web site. These postings are viewable by the entire class and allow students to better share and identify the salient points of each module. These additions appear to facilitate the interactions between those students with differing levels of experience.

There may also be some concerns by IS faculty that moving to an approach that focuses more on IS management capabilities would mean that students would not obtain some fundamental IS knowledge or that this approach would make it easier for this content to be integrated into courses from other disciplines. In response to these concerns, I would argue that most students have a basic exposure to IS either through undergraduate coursework or corporate experience. Having said this, instructors who feel that students need more exposure could easily introduce basic technology (and even emerging technology) concepts through judicious selection of cases. However, it is important to resist the temptation to overly focus on the technology itself to the detriment of the more important issue of how the manager can help the organization leverage technology. With respect to the risk of IS content being subsumed into other courses, I would suggest IS faculty turn this threat into an opportunity by arguing that a course incorporating the IS managerial approach provides a more integrative learning experience, an area of concern that the Association to Advance Collegiate Schools of Business International (AACSB) wants MBA programs to address. The proposed course also provides IS faculty more control of what is being taught with respect to their own discipline as well as how IS integrates with other disciplines.

And finally, while the IS managerial approach to the MBA core IS course is theoretically justified, more work needs to be done. For example, IS research still needs to answer important questions such as:

- Is the above list of core IS capabilities sufficiently inclusive or are additional IS capabilities needed?
- Do the core IS capabilities differ for managers by their level or position in the organization?
- Are these core IS capabilities the same for both IS and non-IS managers?.

IX. CONCLUDING REMARKS

The IS managerial approach does not proclaim to encompass all IS management capabilities, nor does it imply that these are the most important IS management capabilities. Rather, the approach simply states that the core IS course should focus more on the capabilities of the manager to leverage technology instead of on the technology itself; and the proposed course structure is one method for achieving this goal. In addition, this approach does not advocate neglecting the importance of technology or technical skill in relation to firm performance. As an instructor of the course, I make sure to acknowledge research, e.g. Byrd et al., 2001 and Byrd et al., 2004, that has shown a positive link between technical skills and the flexibility of IS infrastructure and competitive advantage. However, the goal, at the heart of the course, is to make students more aware of the impact business, management and social skills have on achieving the desired results from information systems.

It is also important to note that the IS managerial approach should be seen more as a complementary approach rather than a competing approach. With respect to the classical and systems approach (the most common undergraduate approaches), this approach prevents a rehashing of undergraduate material and more importantly builds upon the strategic and management concepts which may only be superficially covered at the undergraduate level. The process approach can also be naturally extended by addressing the strategic, leadership and interpersonal issues associated with process change. And unlike the process approach where finding an appropriate textbook is difficult, content from popular MBA level IS textbooks like Pearlson and Saunders [2006] (see Appendix I) and Applegate et al. [2007] is easily adaptable. Finally, the managerial approach defines the content for the integrated approach as well as maintains the spirit of that approach by identifying how management can integrate information systems with other key organizational elements.

Most importantly, this paper looks to re-stimulate discussion on what we, as academics, should be teaching with regard to IS at the MBA level. Instructors of the core IS MBA course are encouraged to take a careful look at the general knowledge and experience of their MBA students and are advised to structure IS course content to appropriately expand and enhance their students' IS knowledge base and skills. It may turn out, given the degree to which IS skills vary by experience, position, and other attributes, that this "one course fits all" solution may need to be reevaluated; but given the financial and personnel restrictions of most educational institutions, a multiple course solution is highly unlikely. For now, approaches based on the classical or Hershey's [2003] business process models may be more appropriate for MBA programs where the vast majority of students have little or no business experience. However, for MBA programs, including executive MBA programs, where there is a sufficiently high percentage of experienced business professionals, an IS course following the IS managerial approach may better fit the needs of these current and future middle and senior level managers.

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APPENDIX I: SAMPLE COURSE

Week	Topics	Suggested Reading	Cases	Chapters ¹
1	Introduction (Views about IS)	[Carr, 2003; Feeny and Willcocks, 1998; Mata, Fuerst, & Barney, 1995; Porter and Millar, 1985; Ross and Weill, 2002]		Introduction & Chapters 1 & 10
2-3	Business System Thinking	[Hall et al., 1993; Malhotra, 1998; Silver et al., 1995b; Venkatraman, 1994]	Otis Elevator ²	Chapters 2 & 5
4	Relationship Building	[Benjamin and Levinson, 1993; Martinez, 1995]	CIGNA Corp. ²	Chapter 4
5-6	Leadership	[Boynton et al., 1992; Earl and Feeny, 2000; Earl and Feeny, 1994; Weill and Ross, 2005]	Toyota ¹ & iPremier ²	Chapters 9
7	Architecture Planning	[Davenport and Pearlson, 1998; Markus et al., 2000; Sowa and Zachman, 1992]	"Virtually There" ¹	Chapters 3 & 6
8-9	Making IT Work	[Davenport et al., 1998; Hansen et al., 1999; King et al., 2002; McDermott, 1999]	Buckman Laboratories ²	Chapter 12
10-11	Informed Buying	[Barthelemy, 2001; Earl, 1996; Grover and Teng, 1993; Lacity et al., 1996; McFarlan and Nolan, 1995]	Manufact ¹ , General Dynamics ² & Computer Sciences Corp ²	Chapters 9
12	Contract Monitoring & Facilitation	[Barthelemy, 2003; D. Feeny et al., 2005; Karten, 2004; Lacity and Hirschheim, 1993; Lacity et al., 1995; Larson, 1998; Misra, 2004]	Selecting a Hosting Provider ²	Chapter 7 & 9
13	Vendor Development	[DiRomualdo and Gurbaxani, 1998; Insinga and Werle, 2000; Quinn, 1999]	Continental Airlines ¹	Chapters 9
14-15	IS Project Management	[Keil et al., 1998; Keil and Montealegre, 2000; Keil and Robey, 2001; McFarlan, 1981; Teng et al., 1998; Tiwana and Keil, 2004; Wallace and Keil, 2004]	Providian Trust ² & BAE Automate Systems/Denver Airport BHS ²	Chapter 11

¹ Pearlson, K.E., Saunders, C.S. *Managing and Using Information Systems: A Strategic Approach, 3rd Ed.*, Wiley, John & Sons, Incorporated, Hoboken, New Jersey, 2005. Content from chapter 8 (Using Information Ethically) can be introduced throughout the course; also content from chapter 10 can be revisited when appropriate (e.g. Informed Buying)

² Harvard Business School Case



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