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# INFORMATION TECHNOLOGY IN THE MBA CURRICULUM: THE CASE FOR RELEVANT TOPICS

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## Abstract

*While technology can be used as an important competitive tool for organizational survival and growth, many graduate business programs have been unclear in their delineation of which topics should be included within their core IT/IS MBA course. A total of 311 1<sup>st</sup> year, 2<sup>nd</sup> year, executive MBA students and faculty were surveyed as to which technology topics they believed were most important in an IT/IS core MBA course. "Strategic use of MIS", "Management's Information Needs" and "E-Business" were rated as the top three most important topics that should be included in the core IT/IS course. Conversely, "Artificial Intelligence", "MIS Hardware", and "Ethics and MIS" were rated as the three least important topics. These survey results indicate that the desired focus for an IT/IS core course should be on the strategic use of technology to support decision-making rather than on specific technology topics. Interpreted in another way, the results suggest that MBA and faculty would prefer that the IT/IS core course be structured with a managerial or business focus versus a technical focus within their MBA curriculum.*

## Introduction

The case for including an IT/IS (information technology/information systems) course in the MBA curriculum core is clear and compelling to most IT/IS faculty and business professionals. Business organizations, within various industries, spend approximately 40-60% of their capital expenditures on information systems and information technology. As future managers, MBA students soon realize that technology is an important component in value creation and cost reduction at every functional area. As such, technology has long been recognized as a strategic tool for organizational survival and growth (Avison, 2003; Applegate, Austin, and McFarlan, 2003; Keen, 1986; Wiseman, 1988). However, while technology may be pervasive within organizations, graduate business schools may not be providing MBA students with the relevant IT/IS topics that they feel will be useful in understanding and using technology to its full and purported potential.

In an effort to remain competitive, graduate business schools feel compelled to continuously re-examine their MBA course curriculum. In some cases, MBA programs may seek to both reduce core course requirements while at the same time assuring that new and appropriate topics are being added to their programs (Avison, 2003). Inevitably, certain MBA core courses must be considered for removal from the curriculum. The core IT/IS course in the MBA curriculum has often faced this challenge because MBA students who have worked with computer technology find that the topics within the IT/IS course are boring, irrelevant or simply not useful.

So what **topics** should be included in the core IT/IS course? This paper will discuss the results of a survey of MBA students and faculty as to what topics are regarded to be most important in a core IT/IS MBA course. Our results will be reported with a related discussion of their implications and directions for future research.

## Background

While the role of the IT/IS core course in the MBA curriculum continues to evolve, it has clearly changed in scope since the Gutpa and Seeborg study (1989) with regard to what topics should be included. A survey of AACSB accredited schools in 1986

suggested a relatively consistent set of topics that should be covered in core technology courses (Gupta and Seeborg, 1989). These topics included (in descending order of offerings) systems analysis and design, database management, database, DSS, systems life cycle, computer hardware, information systems (IS) planning, systems theory, IS organization by management level, system implementation, IS organization by functional area, computer security, datacomm equipment, programming languages, management theory, systems audit, expert systems/artificial intelligence, and competitive uses of IS (Gupta and Seeborg, 1989). However, while present day professionals, faculty and MBA students would agree that an IT/IS core course should contain useful and relevant topics, a delineation of which topics should be included has been unclear and inconsistent.

The role of the IT/IS course in the overall MBA curriculum can serve two different functions: it can serve as an introductory course or it can be the only technology course in an MBA curriculum (Gupta and Seeborg, 1989). As an introductory course, the IT/IS course may serve as an overview to other technology topics that MBA students may wish to later pursue. As the only IT/IS course, faculty must carefully decide which topics will best prepare their students to use technology as a tool for decision making. While Emery (1986) states that graduate level IT/IS courses should be designed for two different constituents, as those who are specializing in technology and those that are not, there is no data available to indicate whether this is truly the case (Gupta and Seeborg, 1989). With such a diversity of experiences and backgrounds that graduate students bring to an MBA program, selecting relevant topics to include in the core IT/IS course presents a real and ongoing challenge to graduate business schools. The methodology used to survey MBA students and faculty to address this issue are discussed in the following section.

## **Methodology**

The survey included 311, 1<sup>st</sup> year, 2<sup>nd</sup> year MBA students, executive MBA students and faculty from two MBA programs. Seventy-nine students from a Northeast U.S. area university and 178 students from an upper Midwest university participated in the survey. There were 54 faculty responses to the survey that included 39 responses from the ISWorld listserv and 15 responses from the faculty of the Midwest university. Survey data collection is ongoing, thus the results are developmental. In designing our survey questionnaire, a pilot study was first undertaken to determine which topics MBA students felt should be included in their core IT/IS course. Sixteen topics found in ten current and popular MIS textbooks were initially offered as potential topics. However, pilot study respondents were asked to suggest other topics that should be incorporated into the core IT/IS course survey and these topics were included in the final survey instrument.

The survey also included questions regarding the effectiveness of various methods of instruction (e.g., textbook, special topics, case studies, articles, hands-on exercises), group formation and grading, and how the core IT/IS course should be designed to accommodate students with varying levels of technology experience. However, this paper specifically addresses the two following questions:

*Which topics should be included in the core IT/IS course?*

*What do you feel should be the primary scope/purpose of a core IT/IS course?*

## **Analysis of Results**

Table 1 reports the mean importance ratings (in descending order) that respondents assigned to topics that they believed should be covered in a core IT/IS course. Across all MBA and faculty categories, "Strategic MIS", was rated #1, followed by "Management's Information Needs" and "E-Business" as the top three most important topics that should be covered in a core IT/IS course. However, both 2<sup>nd</sup> year and executive MBA students rated "E-Business" as their #1 most important topic. Among 1<sup>st</sup> and 2<sup>nd</sup> year MBA students as well as faculty, "Management's Information Needs" was rated among the top three most important topics, while executive MBA students rated this topic 5<sup>th</sup>.

The overall high rating of "Strategic MIS", "Management's Information Needs" and "E-Business" as the top three most important topics that should be covered in a core IT/IS course suggest that MBA students and faculty may perceive that technology's greatest benefit may be in its use as a strategic and informational tool particularly, as to how it may be used to better survive in the global Internet economy. Of interest, while 2<sup>nd</sup> year and Exec MBA students rated "E-Business" as their #1 most important topic, 1<sup>st</sup> year MBA and faculty rated "E-Business" lower at 6<sup>th</sup> and 5<sup>th</sup> respectively. A possible explanation offered was that 2<sup>nd</sup> year and Exec MBA students might realize they may require more knowledge of E-Business topics to successfully operate within an increasing competitive Internet environment. Conversely, 1<sup>st</sup> year MBA students and faculty may not have experienced enough exposure to E-Business to fully comprehend its value as a strategic tool in a competitive market environment.

Table 1. Mean Importance Ratings for Core MIS Course Topics

IS / IT Core Course Topic	Mean Rank n = 311	Mean Scores All	1st year MBAs n = 83	Rank	2 <sup>nd</sup> year MBAs n = 125	Rank	Exec MBA students n = 49	Rank	Faculty responses n = 54	Rank
Strategic MIS	1	4.10	4.01	1	4.05	2	4.16	3	4.31	1
Management's Information Needs	2	3.96	4.01	1	4.03	3	3.98	5	3.70	2
E-Business	3	3.94	3.71	6	4.15	1	4.33	1	3.43	5
Knowledge Management/Data Mining	4	3.82	3.87	3	3.87	4	4.29	2	3.20	8
Supply Chain Management	5	3.72	3.86	4	3.73	7	4.10	4	3.15	10
Decision Support Systems	6	3.69	3.79	5	3.78	5	3.96	6	3.06	11
MIS in Individual Business Functions	7	3.61	3.62	7	3.77	6	3.47	10	3.33	6
Information Systems Planning	8	3.58	3.36	9	3.65	8	3.77	7	3.58	3
Database Management	9	3.48	3.47	8	3.60	10	3.67	9	3.04	12
Telecommunications and Networks	10	3.40	3.15	12	3.62	9	3.69	8	3.00	13
Technology Resource Organization	11	3.30	3.27	11	3.37	13	3.27	12	3.19	9
MIS Software Systems	12	3.29	3.31	10	3.52	11	3.41	11	2.63	14
International / Global MIS	13	3.22	3.03	13	3.42	12	N/A	N/A	3.46	4
Ethics and MIS	14	2.95	2.51	16	3.02	15	3.10	14	3.22	7
MIS Hardware	15	2.92	2.74	14	3.21	14	3.18	13	2.26	15
Artificial Intelligence	16	2.65	2.65	15	2.87	16	2.76	15	2.08	16
<i>Business (1.0) vs Technical Emphasis (5.0)</i>		2.38	2.39		2.24		2.57		2.86	

Both MBA students and faculty rated "Artificial Intelligence" and "MIS Hardware", as the least important topics to be covered in a core IT/IS course. These findings suggest that "Artificial Intelligence" (AI) may be too specific, too detailed, or beyond the scope of an IT/IS MBA core course. Another interpretation is that "AI" and "MIS Hardware" may be best left to computer scientists or other technology support staff. Additionally, students may only want to know about "MIS Hardware" topics as they relate to capital acquisition costs, ROIs, and how computer hardware considerations fit into the overall strategic direction of the organization.

The "Ethics and MIS" topic was rated among the lowest three topics by all MBA student groups but was rated 7<sup>th</sup> by the faculty surveyed. Obviously, while faculty may consider "Ethics and MIS" an important consideration, students that have long operated in environments of increasing software piracy, intellectual property rights violations, and free Napster music downloads may possibly, not as be as concerned with ethics at this current stage of their educational development.

Finally, it is interesting to note that the traditional or "hard" technology topics of "MIS Hardware", "MIS Software" and "Data Communications / Networks" appear to fall into the bottom half of the ratings. "Strategic MIS" and the use of systems to provide information to address business problems ("Management's Info Needs", "E-Business" and "Knowledge Management/Data Mining") were rated in the top half of the topic importance rating. These results suggest that the desired focus for IT/IS core courses should be on the strategic use of information to support decision-making rather than on specific I/T topics.

Table 2 offered interesting insights into how MBA students (no faculty input) assigned importance to these IT/IS topics as a function of their major. Across the 12 MBA majors listed, 9 majors selected "E- Business" as one of the three most important topics that should be included in the IT/IS core course. Accounting, finance, and marketing majors, which constituted 49% of the data sample, all rated "E-Business" as their #1 most important topic. These MBA majors may have rated knowledge of E- Business as an important and complementary area to their respective fields. This may have been true in particular for marketing majors who rated the "E- Business" topic considerably higher than accounting and finance majors. Accounting majors, in view of the recent problems encountered by .com companies, may want more knowledge of "E-Business" to better develop a keener, stakeholder interest in E-Commerce operations. Finance majors may want to better understand the business plans and revenue models behind the trials and tribulations of so many .com failures.

Table 2. Importance of Topics by Major

	Acct	Fin	Mktg	IS- MIS	Prod- Ops	Tech Mgmt	Leader ship	Entrep.	Health Med	E- Bus	HR	Int'l Bus.
<i>n</i>	17	70	40	18	43	11	32	5	11	4	6	1
<i>Ethics</i>	2.50	2.69	2.97	2.78	2.62	3.18	3.19	3.20	3.36	2.33	4.33	3.00
<i>Strategy</i>	3.21	3.87	4.13	<b>4.50</b>	4.02	4.45	<b>4.16</b>	4.00	<b>4.64</b>	4.33	4.33	4.00
<i>Bus Func</i>	3.43	3.72	3.75	4.11	3.52	3.55	3.65	<b>4.20</b>	3.55	3.50	2.83	4.00
<i>Hardware</i>	3.64	2.88	3.47	3.39	2.86	3.09	3.03	2.60	3.00	2.25	2.50	3.00
<i>Software</i>	3.57	3.26	3.74	3.72	3.40	3.73	3.34	2.80	3.18	3.75	2.50	4.00
<i>DataComm</i>	3.79	3.38	3.67	3.89	3.40	3.45	3.66	2.40	3.45	4.00	2.33	4.00
<i>E-Business</i>	3.86	3.97	4.28	4.28	4.07	4.27	4.06	3.80	3.91	3.75	3.17	<b>5.00</b>
<i>KMDM</i>	3.57	3.86	4.15	4.22	3.84	<b>4.55</b>	4.10	3.20	4.09	3.33	3.00	4.00
<i>Mgmt Info</i>	3.79	3.86	4.18	4.28	4.05	3.91	3.87	<b>4.20</b>	4.00	4.00	<b>4.50</b>	<b>5.00</b>
<i>Tech Orgn</i>	3.36	3.22	3.33	3.41	3.33	3.55	3.37	3.40	3.09	3.67	3.17	4.00
<i>SC Mgmt</i>	3.29	3.83	3.56	3.78	<b>4.37</b>	4.00	3.84	3.40	4.09	3.75	3.17	4.00
<i>DBMS</i>	3.36	3.46	3.79	4.06	3.58	3.55	3.41	3.40	3.64	3.25	3.17	4.00
<i>DSS</i>	3.50	3.81	3.92	3.71	3.77	4.09	3.81	3.80	4.18	3.33	3.67	4.00
<i>AI</i>	2.93	2.86	2.84	2.65	2.51	3.64	2.56	2.80	2.27	2.67	3.33	4.00
<i>IS Plann'g</i>	3.43	3.49	3.44	4.22	3.29	4.09	3.74	3.60	3.55	<b>4.50</b>	4.00	4.00
<i>Global IS</i>	3.00	3.03	3.23	4.00	3.16	4.20	3.25	2.00	N/A	3.67	2.75	<b>5.00</b>

Note: Darkened areas indicate highest (in bold) and lowest importance ratings

“Strategic MIS” was selected by 7 of the 12 MBA majors as one of the three most important topics to be included in a core IT/IS course. “Strategic MIS” was also regarded as the #1 topic by IS/MIS, Leadership and Health Medicine majors, which constituted over 24% of the data sample. While it may be that IS/MIS majors already know the details of technology, they may want to know the strategic applications of IT/IS. Likewise, Leadership majors for obvious reasons, and Health Medicine majors may want to know how IT/IS will assist them in applying new technology developments to their respective fields while at the same time using technology as strategic weapon for market share.

For 11 of the 12 majors, “Ethics in MIS” was rated among the three lowest topics of importance. Interestingly, Accounting, and Finance majors rated “Ethics in MIS” as their very least important topic. It is important to point out that while Accounting and Finance may well be very concerned, due to the nature of their reporting and fiscal duties about business ethics, they may not consider how ethics as a topic applied to the MIS field is important. Artificial Intelligence (AI) was also rated among the three lowest topics of importance by 8 of 12 MBA majors. In particular, Marketing, IS/MIS, Operations, Leadership and Health Medicine majors, constituting over 57% of the data sample assigned the topic of “AI” the very lowest importance.

Finally, “MIS Hardware” was rated among the three lowest topics of importance by 6 of 12 MBA majors. Surprisingly, Tech Management majors rated “MIS Hardware” as their very lowest topic of importance, again emphasizing that MBA students already familiar with technology may want to know more about how IT/IS may be used as an informational tool for strategic advantage. To support this observation, “Strategic MIS” as a topic was rated #2 by Tech Management majors and #1 by IS/MIS majors. Logically, Production Operations majors (constituting 17% of the sample) considered “Supply Chain Management” to be the most important topic followed by “Strategic MIS”. These overall findings are supported by the mean scores listed in last row in Table 1 (*Business (1.0) vs. Technical Emphasis (5.0)*). As an integrity check, all respondents were asked what they believed should be the “primary scope or purpose” of the core IT/IS course. These mean scores indicate, across all MBA groups and faculty, that the core IT/IS course within the MBA curriculum should encompass a *business*, rather than a technical focus with regard to technology topics.

Table 3 compares the topics taught in the Gupta and Seeborg survey (1989) with the topics MBA students and faculty felt should be taught today. Data in the article were given in terms of the number of respondents offering a particular topic. If the percentage of total responses is multiplied by 5 (the scale range used in the current study) a rough comparison of the covered topics of 15 years ago can be approximated to the topics of interest to the current study. As seen in Table 3, many of the topics discussed in the 1989 survey are not included as topics in the current study. Several new topics, including E-Business, Knowledge Management, Ethics, and Supply Chain Management & Global IS, were not represented on the 1989 list.

The focus of the Gupta and Seeborg (1989) survey appeared to be more systems development oriented. The results of the current survey appear to emphasize how technology tools and information can support management decision-making and organizational strategy. Clearly, the newer IT/IS topics accentuate a migration from an *operational* to a *strategic* use of technology for business processes in the current competitive Internet age. Interestingly, the Gupta and Seeborg (1989) study predicted that artificial intelligence (AI) would become an increasingly important topic in the core MIS course. The results of this survey, however indicate that MBA students and faculty have not found this prediction to be true. It may be that AI is considered too technical to be included as a topic in a core technology MBA course and might be more appropriate for computer science majors.

## Conclusions and Implications

While technology has long been recognized as a strategic tool for organizational survival and growth (Avison, 2003; Applegate, Austin, and McFarlan, 2003; Keen, 1986; Wiseman, 1988), many graduate business programs have been unclear in their delineation of which technology topics should be included within their core IT/IS MBA course. Our study found both similarities and interesting differences between what MBA students considered to be relevant topics and what faculty thought should be offered within the core IT/IS course.

The “Strategic use of MIS”, was rated overall, as the #1 *most important* topic followed by “Management’s Information Needs” and “E-Business” as the top three most important topics that should be included in a core IT/IS course. Notably, 2<sup>nd</sup> year and executive MBA students rated “E-Business” as their #1 most important topic. MBA students and faculty rated “Artificial Intelligence”, “MIS Hardware”, and “Ethics and MIS” as the three *least important* topics to be covered in a core IT/IS course. These findings suggest that “Artificial Intelligence” (AI) and “MIS Hardware” topics may too specific or detailed for a core technology course and should be best left to computer scientists or their technology support staff.

Table 3. Comparison of IT/IS Topics Offered 15 Years Ago

IT / IS Topic	Gupta & Seeborg (1989)	Current Study
Systems analysis and design	4.50	
Database management systems	4.43	3.48
Database	4.36	
Decision support systems	4.28	3.69
Systems life cycle	4.10	
Computer hardware	3.89	2.92
Information systems planning	3.89	3.58
Systems theory	3.78	
IS organization by management level	3.49	
System implementation	3.49	
IS organization by functional area	3.46	
Computer security	3.24	
Datacomm / Telecommunications	3.17	3.40
Programming languages / MIS software	2.95	3.29
Management theory	2.88	
System audit	2.05	
Expert systems/Artificial intelligence	0.36	2.65
Competitive / Strategic uses of IS	0.29	4.10
Other	0.69	
E-Business		3.94
Mgmt Info Needs		3.96
Knowledge Management		3.82
Supply Chain Mgmt		3.72
MIS in Individual Functions		3.61
Technology Resource Planning		3.30
Ethics		2.95
International / Global MIS		3.22

Our analysis of how important these IT/IS topics were by *major area of study* indicated that the “hard” technology topics of “MIS Hardware”, “MIS Software” and “Data-Telecommunications” appear to fall into the bottom half of the importance ratings. Topics relating to “Strategic MIS” and technology that addresses business problems (“Management’s Info Needs”, “E-Business” and “Knowledge Management/Data Mining”) were rated in the upper half of the importance ratings by major area of study.

The results of this study, from several perspectives, indicate that the desired focus for an IT/IS core course should be upon the strategic use of information to support decision-making and organizational processes rather than on specific technology topics. Interpreted in another way, our results suggest that MBA and faculty would, for the greatest benefit, prefer that the IT/IS core course to be structured with a managerial or business focus versus a technical focus.

Additional and related research needs to be undertaken in analyzing the following questions: To what degree should case studies vs. hands-on exercises vs. lecture be used within the IT/IS core course? How should project teams be formed and how should they be graded? How can the IT/IS core course be designed to accommodate students with limited technology-related experience and students with extensive technology-related experience?

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