

TEACHING MIS CONCEPTS TO MBA STUDENTS : A CRITICAL SUCCESS FACTOR APPROACH

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ABSTRACT: Teaching the required MIS course in the MBA curriculum has become an increasingly demanding task. As the accrediting agencies have placed more emphasis on the MIS context of the course as opposed to its computer and end-user software literacy aspects, the instructor of the MIS course becomes overwhelmed by the breadth of the material that must be covered in reasonable depth. An even more important challenge facing the MIS instructor remains to convince students that MIS technology needs to be understood before it can be applied, and, that a background in spreadsheet and database management software running on personal computers does not serve as an MIS background in a world where information technology is increasingly regarded as a company's most important strategic weapon. A pedagogical aid that we have found to be exceedingly successful in meeting this challenge is a term project to interview a high-level manager in the student's organization to ascertain whether or not the manager is being supported with the right information to monitor his or her critical success factors. This paper presents the project and the theoretical background for it, as well as some findings from the students' interviews during four consecutive academic terms.

KEYWORDS: MIS, MBA Curriculum, Critical Success Factor

INTRODUCTION

In 1958, H.J. Leavitt and T.L. Whisler (6) made a number of predictions regarding how computers would affect management in the 1980s. One of their predictions, concurred to by other commentators (11), was that computers would be the managers of the future. This has not happened. Managers continue to be indispensable, particularly at higher managerial levels. Nevertheless, computers have changed management style in many organizations.

Today, decision support systems (DSS) (12) realize significant gains in assisting and improving management decision making. The emerging technology of expert systems (3) shows promise as a step beyond DSS to assist in the organization's productivity and in safe keeping of one its most valuable resources--human expertise. At a more fundamental level, integrated, corporate-wide databases have made possible the accessibility of information

that is more timely, of better quality, and wider in scope than was formerly available. Indeed, it is expected that managers utilize this information in making decisions, instead of relying largely on intuition (7).

Of course, that is the ideal state of affairs. In actual practice, organizations and their managers do not maximize the potential of computer-based information reporting systems. In such organizations, both top management and the management information systems (MIS) department must share in the blame. The MIS department's part in the blame stems from the misconception that management's information needs would be fulfilled by reports that are merely produced as by-products of processing the daily transactions of the enterprise. Top management's slice of the blame is carved by abrogating their management responsibilities and allowing the misconception to persist.

To escape from this state of morass in which managers often grapple with the

question "why do I have to have dozens of reports and yet very little of the 'real' information I need to manage?", a different approach is needed. Instead of the by-product, bottom-up approach where transaction processing requirements cast the organization's information system architecture, a top-down approach is needed where management's information needs for planning and control silhouette the required architecture.

In order to begin to adopt this top-down approach to information development and reporting, however, a new breed of managers is required. Managers who are neither awed by the technology of information systems nor estranged by the jargon of information systems professionals. Managers who hold the MIS department accountable for providing them with the 'real' information they need to manage.

Training MBA students to become such managers has become an increasingly demanding task. As the accrediting agencies have placed more emphasis on the information resource management context of the required MIS course in the MBA curriculum, as opposed to its computer and end-user software literacy aspects, the instructor of the MIS course finds herself overwhelmed by the breadth of the material that must be covered in reasonable depth. A pedagogical aid that we have found to be exceedingly successful in meeting this challenge is a term project to interview a high-level manager in the student's organization to ascertain whether or not the manager is being supported with the 'real' information he or she needs to manage. This paper presents the project and the theoretical background for it, as well as some findings from the students' interviews during four consecutive academic terms.

CRITICAL SUCCESS FACTOR REPORTING SYSTEMS

Managers are interested in results. They are interested in identifying specific factors by which the success of their actions may be gauged. They take comfort when knowing, and agreeing with, their defined responsibilities and expected results. They are interested in information that helps them achieve their goals. The nature of that information is diverse and may include several of the following types of information (4):

- * Comfort information: a few daily figures on the state of the business in their domains of responsibility.
- * Internal operations data: a few key figures indicating how things are going (including exceptional situations), together with progress information about planned projects and future assignments.
- * Trigger information: warning or alerting data that suggest potential problems.
- * Problem information: dealing with a crisis or an important

project that demands daily attention until it is past.

- * Information for outside dissemination: performance figures and reports before they are released.
- * External intelligence: information about the environment and reports on competition.

To elicit the 'real' information requirements of a manager, a technique known as critical success factor (CSF) approach may be employed. As the name implies, the pivotal characteristic of CSF methodology is the determination of the set of factors that the manager considers critical for his or her success. Once identified, these factors are stated as his or her objectives and the information required to monitor their performance is then identified.

The CSF method is not new. It is based on the concept of "success factors" introduced by Ronald Daniel (1) in 1961. However, Dr. John Rockart of MIT (8) was first to apply the concept in the information systems arena. The methodology has been further popularized by Rockart (9, 10) and other researchers (2, 5), and is now being increasingly used by MIS departments, and by consultants, as an aid to information systems planning.

Because critical success factors (CSFs) indicate the few key areas of activity in which favorable results are absolutely necessary for the manager to succeed, the manager should have appropriate information to allow her to determine whether events are proceeding sufficiently well in each area. Only by identifying the CSFs will the manager know what information is indispensable to her managerial role. As such, the CSF approach provides a structured technique to identify the 'real' information requirements of the manager by virtue of marrying information development and reporting to her perceived success factors.

Critical success factors differ among industries and for individual firms within a particular industry. For a given manager,

they can be expected to vary some from year to year, but remain fairly constant for periods of time shorter than several months. They can be identified through interview sessions lasting no longer than an hour or two. In the first session, the manager is queried as to his or her goals and the CSFs underlying them. The interview is designed to explicitly extract those critical success factors which managers have been implicitly using. The second session focuses on identification of a specific performance measure for each CSF and possible reports to monitor it. Additional sessions are held as necessary to achieve agreement on the CSFs, their performance measures, and the required reports for tracking them.

It is important to acknowledge that while the CSF methodology paves the way for delivery of the 'right' information to managers, by itself, it does not, and cannot, insure the consistency of a manager's perceived goals with the organizational objectives. That concern remains part of the overall responsibility of top management for goal setting and establishing performance standards that are valid, realistic, understandable, and measurable. Nevertheless, the use of critical success factors can help reconcile diverging individual views of the organization which may be present even if there exist a clearly defined corporate mission and explicitly stated objectives. This is so, because, once the CSFs of individual managers in a business unit are identified, in a step that Rockart calls "alignment analysis" managerial agreement can be sought to arrive at the collective CSFs for that functional area and in the process clarify individual managerial focus.

Finally, although critical success factors vary widely by industry and across firms, they generally originate from the same sources. The Rockart research team at MIT has identified the following as the primary sources of CSFs.

1. Industry-based factors. CSFs determined by the characteristics of the industry itself. As an example, Rockart cites the four

industry-based CSFs of supermarkets:

- 1) have the right product mix available at each store;
 - 2) keep it on the shelves;
 - 3) provide effective advertising to attract shoppers to the store; and
 - 4) develop correct pricing.
2. Competitive strategy, industry position, and geographic location. CSFs derived from whether the firm is a dominant or minor force among competitors; the niche it occupies or the basis of its competitive strategy (such as pursuing product differentiation, or customer service advantages).
 3. Environmental factors. CSFs arising from areas over which an organization has little control but which affect performance, such as energy cost and availability, government regulations, changing customer demands, and the economy.
 4. Temporal factors. CSFs springing from issues, such as modernization of the physical plant, that become critical for a time period which when addressed will no longer determine success or failure.
 5. Managerial position. Generic CSFs associated with each functional management position. For example, manufacturing managers would be typically concerned about product quality and inventory control.
 6. Managerial world view. CSFs rooted in the perspectives brought to their jobs by managers especially in regard to leadership.

**A CRITICAL SUCCESS
FACTOR TERM PROJECT**

Since the CSF approach provides a structured technique to identify the 'real' information requirements of the manager

by virtue of marrying information development and reporting to her perceived success factors, it can serve as a unifying thread when teaching MIS concepts to MBA students. Important issues such as the strategic role of information systems, inter-organizational systems, executive support systems, and economic justification of information technology all surface when examining the CSFs of even a small sample of managers. For these reasons, we have required MBA students enrolled in the core course in MIS to undertake a critical success factor study. A copy of the assignment given to the students is reproduced in the Appendix. Essentially, they are given the required assignment of selecting a manager in their organizations and conducting a structured interview to obtain the answers to the following questions:

1. Whether or not the manager is familiar with the CSF concept?
2. Whether or not the manager could communicate the critical success factors for her position along with a specific performance measure for each factor?
3. What is the source of each critical success factor? Is it industry-based, competitive strategy, environmental, temporal, managerial position, or managerial view?
4. Whether or not the manager was getting the 'right' information (from the MIS department or some other source) to monitor the performance of each critical success factor? AND
5. How information technology could be used to enhance the critical success factor reporting system for the manager?

During consecutive academic terms in 1987 and 1988, a total of 114 managers in Michigan were interviewed. Their positions ranged from accounting department supervisor to plant manager to senior vice president in charge of domestic and

international marketing in a manufacturing concern with 1987 sales of over \$700 million. Not surprisingly, most managers were in the automotive industry. Nevertheless, many other industries were represented as the data in Table I indicates.

**TABLE I
Distribution of Organizations
in Sample**

Organization Type	Number in sample
Automobile Manufacturing	31
Computer Services	2
Construction	3
Consulting	2
Educational	18
Financial Services	14
Health Services	3
Insurance	2
Legal Services	4
Manufacturing	18
Publishing	1
Retail	6
Transportation	1
Utility	3
Wholesale	4
Other	12

TOTAL	114

A small number of managers were familiar with the CSF concept (see Table II). However, many indicated familiarity with the idea, if not with the specific terminology. In some instances, that claim was justified by evidence of an adopted closely related formal method such as management by objectives.

**TABLE II
Managers' Familiarity with
the CSF Concept**

Familiarity	Number in sample
Familiar	23 (20.1%)
Unfamiliar	91 (79.8%)

An alarming result from the interviews (see Table III) was the inability of nearly a third of the managers to communicate specific performance measures for their perceived critical success factors. This is disturbing since, to be effective, organizational objectives and standards must be both understandable to, and measurable by, those who are expected to meet them.

TABLE III
Managers' Ability to Identify Specific Performance Measures for their CSFs

Ability	Number in sample
Able	78 (68.4%)
Unable	36 (31.5%)

In Table IV, for each of the six common origins of CSFs, we indicate the number of managers who had at least one critical success factor rooted in that source.

TABLE IV
The Origin for Managers' Critical Success Factors

Origin	Number of managers with at least one CSF derived from this source
Industry-Based	8
Strategic	19
Environmental	110
Temporal	3
Managerial Position	107
Managerial View	10

The term project has proved to be exceedingly successful in bridging the gap between theory and practice. Students acknowledge that by examining MIS issues against the backdrop of their own organizations, they begin to regard the course not merely as a requirement toward an MBA degree but rather as a prerequisite

for success in their careers as managers. Indeed, the term project has been instrumental in conveying the message that information processing is no longer just a tool for today's corporation, but can be its most important strategic weapon. Savvy business executives practice this message, and the most successful MBA students will be those who understand it as well.

SUMMARY AND CONCLUSIONS

Teaching the required MIS course in the MBA curriculum has become an increasingly demanding task. As the accrediting agencies have placed more emphasis on the MIS context of the course as opposed to its computer and end-user software literacy aspects, the instructor of the MIS course finds herself overwhelmed by the breadth of the material that must be covered in reasonable depth. An even more important challenge facing the MIS instructor remains to convince students that MIS technology needs to be understood before it can be applied, and, that a background in spreadsheet and database management software running on personal computers does not serve as an MIS background in a world where information technology is increasingly regarded as a company's most important strategic weapon.

In this paper, we have presented a pedagogical aid that we have found to be exceedingly successful in meeting this challenge. We have required MBA students enrolled in the core course in MIS to undertake a critical success factor study in their own organizations. The critical success factor approach is an effective response to the commonly heard complaint of managers about their information systems support that it is "too many reports and in general irrelevant". The CSF methodology is an attempt to home in on individual managers and their 'relevant' information needs. This is accomplished by marrying information development and reporting to a manager's perceived success factors.

By examining important MIS issues such as the strategic role of information systems, inter-organizational systems, executive support systems, and economic justification of information technology against the backdrop of students' own organizations, the course has been able to successfully bridge the gap between theory and practice. Students acknowledge that the term project has reshaped their attitudes toward the course from that of a requirement toward an MBA degree to one of a prerequisite for success in their careers as managers.

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AUTHOR'S BIOGRAPHY

Mohammad Dadashzadeh received his B.Sc. in Electrical Engineering, and his M.Sc. in Computer Science, both from Massachusetts Institute of Technology. Having completed his M.B.A. training at the American International College, he joined the Department of Computer & Information Science of University of Massachusetts where he obtained his Ph.D. in 1985. Dr. Dadashzadeh has been affiliated with University of Detroit where he served as an assistant/associate professor of management information systems. He is currently with the Department of Decision Sciences of The Wichita State University. Dr. Dadashzadeh's publications have appeared in journals such as *Information Systems*; *Journal of Applied Business Research*; *Computer Standards & Interfaces*; *Journal of Systems Management*; and *DSS-88 Transactions*. Dr. Dadashzadeh serves on the Editorial Review Board of *Journal of Microcomputer Systems Management*. He is a member of the Association for Computing Machinery and the Society for Information Management.

APPENDIX
Critical Success Factors
Assignment

Critical Success Factors (CSFs) is a method for determining the information requirements for managers. Managers are asked: "what factors are critical to the success of your activity, how are those factors measured, and what information do you need to achieve success in them or monitor progress?"

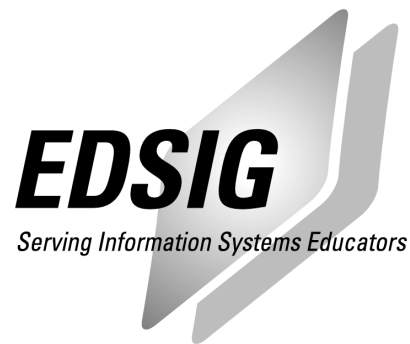
Regardless of the scope involved, most organizational responsibilities can be characterized by a relatively limited number (three to six) of critical factors--tasks, objectives, or decisions that must go right if success is to result. These factors should receive constant and careful attention by managers. If the defined factors are achieved, then the manager is considered successful in the job. Critical success factors, which may be based on both industry and organizational characteristics, tend to reflect control issues, rather than planning issues.

An example of one CSF for a book store manager might be that the store must sell \$5,000 worth of books per week. Note that the success factor is sale and it is measured unambiguously as \$5,000 worth of books per week. An example of a report to support this CSF is a summary of daily sales along with cumulative sales figures for the week.

Select an organization and contact a manager or similar person who makes decisions affecting that organization. This person may or may not work in a business setting, and may or may not have some form of computer support when working. It is important, however, that the person work for an established organization and not be self-employed. Do try to find a manager as high up in the organization ladder as you can. You are to interview the decision maker and determine three CSFs along with their specific performance measures for that person. It might be appropriate to share this handout with your interviewee at the time you make an appointment for the interview.

Your report of the interview (4 to 7 typed, double-spaced, spell-checked pages) should consist of the following four sections:

1. Begin the paper with a section providing a brief (1-2 paragraphs) description of the ORGANIZATION (its size, type of industry, etc.). You need not identify the organization by name. This explains the context of the decision making activity.
2. In the second section, briefly (1-2 paragraphs) describe the characteristics of the POSITION of the person you interviewed, that is, the person's role and responsibilities within the organization.
3. In the third section, for each of the three critical success factors,
 - i) briefly (1-2 paragraph) describe the CSF and identify how it is measured,
 - ii) describe information that the manager would need to receive in order to monitor attainment of that CSF,
 - iii) indicate whether or not the manager receives such information, and whether the provider of that information is the MIS department or the manager's department,
 - iv) briefly describe (1-2 paragraphs) the report that monitors attainment of that CSF (if no such reports are available to the manager, then indicate the contents of a report that would achieve this objective), and
 - v) briefly discuss how technology might contribute to improved reporting on that CSF.
4. Conclude the report with a section on the reaction of the decision maker to the concept of CSFs? Had the person heard of the term previously? Does the manager think that reports based on CSFs would improve decision making? Does the manager believe that he or she is getting the right information to achieve his or her critical success factors?



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