

# Information and Management: A Critical Success Factor Study

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## ABSTRACT

*During four consecutive academic terms, working MBA students enrolled in the core course in management information systems were required to conduct a structured interview with a manager in their organizations. The principal objective of the interview was to ascertain whether or not the manager was being supported with the right information to monitor his or her critical success factors. This paper reports on the results of these interviews.*

## Introduction

In 1958, H.J. Leavitt and T.L. Whisler (1958) made a number of predictions regarding how computers would affect management in the 1980s. One of their predictions, concurred with by other commentators (Simon, 1965; Anshen, 1969), 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 (Alter, 1980; Sprague & Watson, 1986) realize significant gains in assisting and improving management decision making. The emerging technology of expert systems (Holsapple & Whinston, 1987) shows promise as a step beyond decision support systems which can assist in organizational productivity and in safe keeping a most valuable resource--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 will utilize this information in making decisions, instead of relying largely on intuition (McCormick, 1987). Of course, this 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 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 byproducts of processing the daily transactions of the enterprise. Top management's slice of the blame is carved by allowing the misconception to persist.

To escape from this 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 byproduct-based, 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 clear definition of the 'real' information needed by managers is required. That definition is accessible through the concept of critical success factors.

## 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 this information is diverse and may include several of the following types:

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. (Jackson, 1986)

To identify 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 characterized.

The CSF method is not new. It is based on the concept of "success factors" introduced by Ronald Daniel (1961). However, John Rockart of MIT was first to apply the concept in the information systems arena (1979). The methodology has been further popularized by Rockart (1982) and other researchers (Davis, 1979; Jenster, 1986) 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 make explicit 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 topical issues, such as modernization of the physical plant, that become critical for a time period, then 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.

### Objectives of this Study

The purpose of this study was fourfold. It was decided to survey managers in Michigan to determine: (1) if they were familiar with the CSF concept; (2) if they could communicate the critical success factors for their positions along with a specific performance measure for each factor; (3) if they were getting the 'right' information (from the MIS department or some other source) to monitor the performance of each critical success factor; and (4) the source of each critical success factor as one of: industry-based, competitive strategy, environmental, temporal, managerial position, or managerial view.

### Methodology

The survey was conducted by working MBA students enrolled in the core course in management information systems during four consecutive terms in 1987 and 1988. Essentially, they were given the required assignment of selecting a manager in their organizations and conducting a structured interview to obtain the answers to the first three questions above. The response to the fourth question was to be derived upon analysis of their written reports.

The students were instructed about the CSF methodology and coached through a sample CSF interview. They were provided with a written statement of the purposes of the interview, and were instructed to share that statement with the participating managers prior to the interview. It was assumed that all of the participating managers would interpret the questions, with the help of the students, in the same manner as was intended. Also, it was assumed that all of the participants would respond to the questions in an impartial and factual manner. It was possible that some of the participants did not understand the questions, or that some of the students did not spend the time to probe further, or that some of the responses were not based on facts. Therefore, the findings of this study may be influenced by these factors.

A total of 114 managers were interviewed. Their positions included: accounting department supervisor; corporate comptroller; purchasing manager; product manager; national sales manager; project manager; quality control manager; plant manager; vice president of engineering and product development; director of information systems; human resources director; senior vice president in charge of domestic and international marketing in a manufacturing concern with 1987 sales of over \$700 million; and president. Not surprisingly, most managers were in the automotive industry. Nevertheless, many other industries were represented as the data in Table 1 indicates.

### Findings

A small number of managers were familiar with the CSF concept (see Table 2). However, many indicated familiarity with the idea, if not with the specific terminology. In some instances, such claims were supported by evidence of an adopted closely related formal method such as management

by objectives.

**Table 1. Distribution of Organizations in Sample**

Organization Type	Number in sample
Automobile Manufacturing	31
Computer Services	2
Construction	3
Consulting	2
Educational	8
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
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	114

**Table 2. Managers' Familiarity with the CSF Concept**

Familiarity	Number in sample	Percentage in sample
Familiar	23	20.2
Unfamiliar	91	79.8
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	114	100.0

An alarming result from the survey (see Table 3) was the inability of nearly a third of the managers to communicate specific performance measures for their perceived critical success factors.

**Table 3. Managers' Ability to Identify Specific Performance Measures for their CSFs**

Ability	Number in sample	Percentage in sample
Able	78	68.4
Unable	36	31.6
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	114	100.0

Table 4 summarizes data representing the opinions of the managers as to whether or not they were being supported with the 'right' information to monitor their critical success factors. For those managers who were getting the 'right' information, in whole or in part, Table 5 identifies the provider of that information as either the MIS department, the end-user department, or both.

**Table 4. Managers' Evaluation of their CSF Reporting Systems**

Evaluation	Number in sample	Percentage in sample
Adequate	63	55.3
Somewhat adequate	30	26.3
Inadequate	21	18.4
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	114	100.0

**Table 5. Managers' Source for CSF Reporting**

Source	Number in sample	Percentage in sample
MIS Department	74	79.6
End-User Department	10	10.7
Combination	9	9.7
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	93	100.0

Finally, in Table 6, 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 6. The Origin for Managers' Critical Success Factors**

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

## Discussion and Conclusions

A commonly heard complaint of managers about their information systems support is that it involves "too many reports and in general irrelevant". The critical success factor approach 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.

In the study reported in this paper, 114 Michigan managers were interviewed to determine whether or not their CSF reporting needs were being satisfied. Eighty-two percent of the managers indicated that they were getting the 'right' information, in whole or in part. In 80% of these cases, the 'right' information was provided in its entirety by the MIS department. In spite of these promising indications, an alarming result was gleaned by the study. Nearly a third of the managers failed to identify specific performance measures for their 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.

If the findings of this study are representative, then a large proportion of our managers, in manufacturing as well as service sectors, essentially do not have a clear picture of how, and on what basis, their success is measured. We consider this to be unacceptable in the global economy in which our companies have to compete. An organization-wide CSF assessment can not only provide the basis of establishing organizational information requirements, but it can also be used as an instrument to clarify and communicate organizational objectives and promulgate clear and measurable performance standards. It is then, that managers can be provided with information that they would consider 'right' for the right reasons. Future research which attempts to establish a relationship between the existence of specific CSF performance measures and managerial effectiveness, at different managerial levels and in service as well as manufacturing sectors, should provide valuable insight as to the merit of undertaking an organization-wide CSF assessment.

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