MAKING INFORMATION SYSTEMS A STRATEGIC ISSUE

Henry B. Edwards, CIBA-GEIGY

INTRODUCTION

Over the past 25-35 years, the information processing industry has grown from the very rudimentary use of the technology to a complex multi-billion dollar sophisticated business. The industry has matured and with that maturity, technology offers exciting new opportunities for doing business differently and more competitively than ever before. The use of technology is no longer limited by technology but by the lack of vision and creativity of persons using the technology.

It is not an exaggeration to say the technology challenge has moved from the machine to the top management. "The difference between now and five years ago is that then technology had limited function. You weren't betting your company on it," says William H Gruber, President of Research and Planning, Inc., a Cambridge (MA) consulting firm. "Now you are." (4) Eric Vogt, President of Micromentor, Inc. says "If you speculate about the next three years, there will be three kinds of people in business, those who do nothing -- those who are afraid of the technology and those who will say 'I can run my business very effectively on the back of an envelope. I don't need new technology.' The second and third groups will incorporate technology, and that will break down into companies that do it well and those that do it poorly." He goes on to say "In my experience, I have not seen any business yet that cannot benefit from incorporating technology."

Other experts say that our business environment, because of increased foreign competition, is much more competitive that it has ever been. Therefore, companies need all the help they can get to gain a competitive advantage.

Some progressive companies have recognized the profitability of targeting key business areas with high-tech tools to gain such a competitive advantage. The successful strategic use of information systems by some major corporations, such as American Hospital Supply, Merrill Lynch and Co., and American Airlines has raised the awareness of the technological potential to many other corporations. Such success stories have sent companies in every industry scrambling to find ways to harness the power of information technology from computers and telephones to communications satellites and videodisks. (4)

With all the hoopla in the trade journals and even Business Week, the majority of firms continue to look for guidelines to assist them in applying technology to promote their business. The idea of strategic use of Information Systems (IS) is in vogue. This paper discusses some of the current concepts of major corporations regarding the importance of information systems. This paper is based on research of 60 United States firms in order to gain a better insight on the issues surrounding the use of Information Systems. In addition to the survey, current literature was reviewed. This research is an attempt to develop generic guidelines that could be used by any organization regardless of size or sophistication.

This paper is organized into three major sections. A brief review of the research study lays the ground for the rest of the paper. Next, the hurdles or road blocks preventing the strategic use of IS are reviewed. Finally, a five phase approach is presented to move IS into a strategic position.

RESEARCH STUDY

The purpose of the survey was to gather information on the factors attributing to the successful implementation of strategic uses of Information Technology or Information Systems. From a three page questionnaire sent to over ninety organizations, we received sixty-four (64) responses from fifty-nine individual organizations. These organizations ranged in size from ten to one hundred thousand employees with a mean size of 7762. The Information Systems departments employed from one to 1000 people with a mean of 152.

The survey was sent to top information systems persons in the organization and to top management as well. We wanted to get responses from both perspectives. To give you a perspective on who responded, we had Twenty six top management responses (Vice President and above) and thirty-four (34) middle management (Directors and managers). These included five CEO's or Presidents.

We found that fifty-nine percent felt that IS was being used strategically. When the ways that IS was applied strategically were reviewed, in many cases the customer was mentioned. It was also very interesting seeing the many creative ways that the technology had been applied. What is strategic for a very small organization, might seem quite mundane for the larger concern.

HURDLES

If the technology is there, why have not more companies taken advantage of it? Ask yourself these questions. Has it been because I have been too busy taking care of day to day problems instead of planning for the future? Does your top IS person feel that it is his/her job to keep the systems and hardware functioning and it is the management's problem to keep the business running? Of course, the reason
for not using the available technology is different for each individual firm. However, there are some problems that exist in many firms. Some experts believe that top management is afflicted with "Technological Myopia". Some say there is a difference in the management style between the IS department and management. Let's look at some of the theories more closely.

One of the main purposes of our survey was to determine factors that prevented businesses from using IS strategically. In the survey, only three unique reasons were listed on the form for the respondents to check: Lack of Management Support; Lack of Resources; and Lack of Personnel. The distribution was:

- NONE: 22%
- LACK OF MANAGEMENT SUPPORT: 15%
- LACK OF RESOURCES: 8%
- LACK OF PERSONNEL: 23%
- OTHER: 25%

Of those 22 percent who suggested that there were no hurdles, 91 percent said IS was used strategically in their organization. This is what you would expect.

After reviewing the literature and our own research, the hurdles fall into two broad categories. One is top management's awareness of the benefits available through the strategic use of IS. The other is the differences in management styles or concerns between the top management and the IS management. In our survey, of those responding explicitly, these two categories were evenly divided. We received comments such as "Lack of understanding by top management" and "reorientation of IS management and staff to business concerns."

Let's look first at the dichotomy of views between top management and the IS management. In the past, the Information Systems managers were concerned with getting the most processing throughput for the dollar. Of course, in many cases this is the direction that top management was giving the IS department. In order for the IS management to help implement strategic systems they must become aware of what is strategic for the organization. They must become more aware of the business concerns. Our research shows that the concerns of IS management were more technical in nature where the concerns of management were more business and customer oriented.

We see the same thing in the literature. From an article in Business Week, "most data processing managers don't think like business strategists. And most executives don't really understand what technology can do. That's a big problem for companies trying to use technology to gain a competitive edge. People are often on different wavelengths."(4) In one of John Rockart's articles on IS, he suggests "that the emerging role for the Chief Information Officer (CIO) will require a set of managerial skills and attributes which, though useful to the IS executive in the past will become absolutely critical in the future. It will not be enough that the CIO have a considerable understanding of the technology. In addition, the CIO must be a general business oriented manager with considerable political, organizational, and communication skills."

Some researchers suggest that there is inherently a personality difference between the IS management and the organization's management. The top management is more big picture oriented and intuitive, whereas the management of the IS department is much more structured and detail oriented. When these two personality styles meet, communications is often hindered unless one of the individuals is willing to change gears. The solution here is to be aware of the possible differences and be willing to adjust as the situation dictates.

One study suggests that the level of the IS executive has an impact on the relationship between top management and IS. "Especially for those organizations where information systems activity is important to corporate strategy, the "status" of the systems manager dramatically affects the planning process. IS is much more likely to be perceived as supporting the critical needs of the business when there are few levels between the senior management and the IS manager."(4) Our own research supports this. Only five of the firms responding had moved to the stage of naming the top IS executive a Chief Information Officer. However, in all firms with a CIO, they stated that technology was being used strategically. Probably, by the mere act of creating the CIO position, the firm viewed IS strategically. We also found that in fifty percent of the organizations surveyed, the top IS executive was either a Vice President or CIO.

Let's now look at the problem of the lack of top management awareness. When the management of any organization becomes aware of tools or methods that will increase the effectiveness and the profitability of the organization, it begins utilizing that method. In the past, Information Technology was perceived as saving a good deal of expense when it came to processing large amounts of data. The full awareness of further capabilities is just now beginning.
In an article concerning thinking strategically about Information Technology, Wyman labels the inability to apply technology strategically as "Technological Myopia." He classifies this as internal and external. Internal myopia is when a company doesn't see how to use advanced technology in a strategic way. Why is this? Again we can look at the major concerns of the business professional. They are concerned with the traditional ways of running the business. Until recently, they were basically illiterate on computer technology. With the advent of the personal computer, end-user computing, and in-house training courses, top management is becoming aware of information technology. Unless top executives have some familiarity with what can be done with this technology, they will continue to have a difficult time in its application in business.

EXECUTIVES are continually presented with requests for more and more computer resources without a full understanding of the bottom line impact. They see this as an ever growing expense that must be put under control. The top management must be educated on the benefits available. If in the past all of the projects have been late and over budget, then of course their attitude of the IS department is going to be negative.

SOLUTIONS

We have discussed the hurdles to utilizing Information Technology or Information Systems strategically. It is now time to lay out some generic guidelines that can be used by any organization.

The five phase approach is general enough that it can be implemented by most organizations. The five steps are:

I. ASSESSMENT
II. DEVELOP A PLAN OF CHANGE
III. INCREASE TOP MANAGEMENT AWARENESS
IV. CHANGE THE IS DEPARTMENT'S PERSPECTIVE AND GOALS
V. CHANGE THE CORPORATE CULTURE.

ASSESS WHERE YOU ARE AND WHERE YOU WANT TO BE

You must know where you are presently and where you want to go before you can lay out a plan to get there. This seems trite but is often overlooked. You may not want to change. You may be just beginning to develop your plans and are not yet to the point of developing strategic plans. Your company may have more pressing issues. But before you can begin a journey, you need to know what your starting point is and where it is you want to go. Also, you need to have a time frame in mind. Do you want to get there in one year or three?

Part of this plan should also be the definition of the critical success factors for the organization. This is what Verbatim did before they designed their Executive Information System. You need to know what you have to work with before you can begin trying to apply strategic solutions. The implementation of advanced technology for technology's sake does not put money on the bottom line.

Also, what is the status of Information Systems in your company? Does the IS department have a good reputation? Is the top IS person on a peer to peer status with top management?

DEVELOP A PLAN

Once you have determined where you are and where you want to be, you must lay out those steps that will take you there. This seems so obvious, but in many cases there is no such planning. You need to ask yourself: Does your company have a strategic plan which lays out how IS will be used? Does the IS department have a strategic plan that addresses business issues?

According to McFarlan, "Each company should have a summary of the IS plan of about three pages that vividly communicates to the CEO...why IS expenditures are allocated as they are, and what explicit types of competitive business benefits the company might expect from its IS expenditure. (5)

DETERMINE in what areas of the business IS can have a positive bottom line impact. "Successful firms in an industry position themselves relative to industry forces by effectively implementing one or more generic strategies: Overall cost leadership on an industry-wide basis; ii. Differentiation of product and services on an industry-wide basis; iii. Concentration on a particular market or product niche. Each of these strategies provide a general framework within which sets functional policies and procedures, and performs activities that implement that strategy. Information Technology can impact the ability of firms to execute a particular generic strategy." (6)

INCREASE MANAGEMENT AWARENESS

This alone may be the most important step. This of course cannot be done if there is currently little regard for the IS staff. One step in increasing the awareness is to reduce any hostility between IS and management.

Create some successes first and then publicize them. If you have had some recent successes build on them. Dispel the myth that anything the IS department touches is always late and/or over budget. Some call this "Cultural
Infusion* where a project is piloted with key people in the organization and then is built upon positive reaction of those people to the project. *Research has shown that inter-personal communication with near-peers who have experience with the innovation is the most important means by which an individual can evaluate and make the choice to adopt to the innovation." (8)

The most effective means of persuasion is to make top management aware of some advances of the competitors and how it has benefited them. Find out what everybody else in your industry is doing relative to IS. You may learn of some creative ways it can be applied to your own organization.

CHANGE THE PERSPECTIVE OF THE INFORMATION SYSTEMS DEPARTMENT

The perspective of the IS department must change from less of a service or staff oriented department to one that is closer aligned to the business concerns. How many IS managers have visited customers or suppliers? How many know what the critical success factors are for the organizations? Finally, how many know how to apply the technology to help the organization meet its business objectives? If you can answer yes to these questions, then you are on the right track. You must now overcome the hurdles of changing the organization.

Rockart, et. al., suggest that if the IS manager is going to be able to manage the dynamics of a changing business and changing technology, then the IS manager must participate as a real general management peer. (7)

He also says that especially for those organizations where Information Systems activity is important to corporate strategy, the "status" of the systems manager dramatically affects planning success. IS is much more likely to be a part of a supporting critical needs of the business when there are few levels between the senior management and the IS manager. High status managers were well respected by their superiors, and were often involved in the discussion of problems and opportunities outside of MIS per se. Low status managers were either viewed negatively or they were considered "part of the woodwork."

CHANGE THE CORPORATE CULTURE

We have stated that top management and IS management must change. But, how does one go about doing this. Change will not come about overnight. There must be some incentive to go through the change. "Major change inside large corporations is too complex to lend itself to a set of regimented steps adhered to every time. Rather, managers learn general principles and a

matrix of possibilities that fit in different ways, depending on the variables. There is, however, one definite rule: The more a change disrupts an employee's routine and the more significant a change is to the company, the more important commitment becomes." (2) This commitment must come from both parties.

Before the corporate culture can be changed, as stated before, the role of the IS manager must change. "Traditionally, the MIS/DP professional was trained and rewarded to function primarily as a technician, one whose purpose was limited to the design, development and/or acquisition of technically sound hardware or software systems. Little attention was granted to the use and his/her frustration with adapting to the new technology." (3)

Wyman in his article on "Technological Myopia" states, "The biggest obstacle is corporate culture." He goes on to say that in a company whose view of the importance of IS is low "nothing short of a cultural revolution is going to move them to the top, an to bring about that revolution, strong leadership is needed. The CEO must believe -- and make others believe -- that the firm's fortunes hinge upon the successful application of technology. And if the CEO himself is mired in the outdated culture, nothing short of a major competitive threat will cure him of his myopia." (7)

By educating the corporation on the concepts of computers through use of personal computers, classes, speakers, or in-house training sessions, the people will begin to understand the technology. Education will also water down the computer mystique.

CONCLUSION

This paper does not suggest a magic prescription of certain technologies that can be instituted to wondrously help an organization gain market share or increase the loyalty of the customers. The unique solutions must come from each organization. In this paper we have made some suggestions that will make the IS department and the executives, partners in the search for that unique solution that will put them ahead of the competitors. There must be a mutual partnership for the successful implementation of strategic Information System.

The successful strategic application of technology by companies such as American Hospital Supply, American Airlines and so forth has increased the awareness of the large benefits that can be reaped. There are hurdles that must be overcome to move an organization into the arena of utilizing advanced technology to help an organization meet their business objective and to "gain a competitive

411
advantage." Companies must now apply technology just to keep business. One example of this is when General Motors told their suppliers that orders were going to be supplied electronically instead of by the traditional method. The suppliers scrambled to implement the technology to allow them to do this. The progressive companies were ready for this. Others may have lost business.

Suggestions for making Information Systems a strategic issue include: Determining where you are and where you want to go; Developing a plan to get you there; Changing top managements perception of the important of IS; and finally changing the direction of the corporate culture to viewing IS as an asset instead of a liability. This all sounds simple. One must take some risk and have a commitment to make the move.

References