OUTSOURCING: CAN CASE TECHNOLOGY STEM THE TIDE?

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ABSTRACT: In their desire to contain rising IS costs while at the same time becoming more productive, many corporations are developing an interest in outsourcing part or all of their IS functions as one strategy for accomplishing these objectives. While this may make sense for some IS functions because of systems developed with older technology, another strategy should be to put some emphasis on developing more effective and efficient systems using CASE technology. In the 1990s, the competitive advantage will go to those firms that can effectively utilize the full potential of information technology.

KEYWORDS: Outsourcing, Computer Aided Software Engineering (CASE), Business Information Systems Planning (BISP), Information Systems (IS), and Systems Development Life Cycle (SDLC)

INTRODUCTION

Few management trends in recent years have generated as much interest as outsourcing or have been so widely misunderstood. (4) What is outsourcing? Does it have the potential to threaten the future existence of MIS departments?

Often users, vendors, and consultants define the term differently and disagree about the potential benefits as well as the risks. Some see outsourcing as a solution to the shortages of skilled workers. Others see it as a way to contain rising costs and reduce staff.

Although there is no hard-and-fast definition of the term, outsourcing at its purest level involves the transfer of some or all of the IS assets or staff to a vendor that assumes profit and loss responsibility. It is a service that is paid for on an ongoing basis. (4)

In order to be more competitive in the global marketplace, large corporations are looking for ways to cut costs and be more productive. In the past, IS departments helped by automating manual functions and streamlining business processes.

However, this process, while reducing other departments' budgets, increased the IS department's budget. As a result, IS budgets are the third highest expense at large corporations, exceeded only by personnel expenses followed by travel and entertainment expenses. (8)

The Yankee Group, a Boston-based market research firm, estimates that by 1994 outsourcing services for U.S. companies worldwide will reach almost 50 billion dollars in revenue. (4)

Unfortunately, over the years, we have reached a point where the lack of flexible and effective systems development has resulted in many corporations looking to outside help to lower costs and improve productivity. (8) However, today we have CASE technology to help us build the kinds of systems we need. We now have an effective tool to help us compete with outsourcing vendors for strategic systems development.

BACKGROUND

Outsourcing has been around for years but most observers would agree that the current momentum behind the outsourcing movement began in 1989, when Eastman Kodak Co. outsourced its data center operations to IBM. Since that time, Kodak has outsourced its telecommunications systems to Digital Equipment Corp., and its personal computer procurement and maintenance functions to Businessland. (7)

Other significant outsourcing contracts since that time have been issued by Sun Marketing and Refining Co. with a 180 million dollar contract to Arthur Anderson Consulting Co.; Merril Lynch with a 150 million dollar contract to MCI Communications Corp.; and First Fidelity Bancorp of New Jersey with a 450 million dollar contract to Electronic Data Systems (EDS).

As a result of these and other significant outsourcing contracts, the question now facing some IS departments is not whether to outsource or not, but rather what to outsource. Outsourcers like Electronic Data Systems (EDS) prefer the ''whole ball of wax'' approach to outsourcing which includes application development and maintenance as well as operations - in effect the replacement of in-house IS. (17)

There is little doubt that cost reduction is the driving force behind the current wave of interest in outsourcing. Even if a company is not currently considering outsourcing, it can pay to make a comparison of costs between keeping operations in-house and farming them out. This process seems relatively straightforward - a matter of adding up salaries, fees, and maintenance costs, and amortizing hardware and software costs, and finally breaking the figures down into hourly units. (15)

However, there are those who say that outsourcing must not only cut costs for you. These voices caution that you also must have added value - increased return on equity. Cutting costs is a short-term strategy but added value can be a long-term benefit of outsourcing. (11)

Still others caution that outsourcing can be a tricky business. Some risks to consider are: Can the service provider expand its facilities to meet my growth needs - do they have the resources to handle an expansion of my business; what rights do I have to bring some or all of my processing back in-house without incurring a stiff penalty - times change and in the future I may decide to do some in-house processing; what security measures does the service provider have for my data - password protection as well as physical protection of my data; and will the service provider use up-to-date systems to process my data - flexible systems using the latest technology. (10)

BUSINESS INFORMATION SYSTEMS PLANNING

During the early years of what was more commonly referred to as Data Processing, IS departments were looked upon as a savior of an organization. Computer processes automated clerical functions and made information available that previously was not possible due to time and manpower constraints. How is it then that IS departments find themselves in such difficulty in the 1990s?

Basically what most organizations have today, as a result of the applications-oriented approach they have

taken in automating business functions, is a portfolio of slightly different and incompatible applications, even when they use the same data. Users typically find that they cannot compare reports across different applications. The answer to the problem seems partly to be that there has been an absence of planning methodologies such as Critical Success Factors, Portfolio Analysis, and Strategy Set Formation which are all concerned with identifying what must be done to achieve business objectives. (1) These methodologies enable organizations to have a basic understanding of their overall information needs.

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Supporting the planning methodologies are other methodologies such as Software Design and Software Development. Software Design Methodologies include Information Engineering, Structured Analysis and Design, and Prototyping. Software Development Methodologies include Applications Generators, 4 GLs, and Computer Diagramming Tools. (1)

Information systems reflect the character of the organization that they support. IS is not the problem child, but merely the identifiable patient. The real issue is how to redefine the organization in response to present-day business challenges and in alignment with the information revolution. (12)

One last point to strongly consider; any IS plan must take into consideration the views of not only IS management, but also the views of the end-users as well the views of the IS department itself.

COMPUTER AIDED SOFTWARE ENGINEERING (CASE)

Because of the way that computer systems have been developed in the past,

IS departments are faced with costly and ineffective systems. As a result, service providers (outsourcers) may be able to perform a number of IS functions in a more cost-effective manner. Cost seems to be a major concern of many business executives. One such obvious function with potential cost savings is the computer center operations. Some data centers are so large they can achieve economies of scale with just improvements to their data center operations. Culturally this may not be possible. However, by outsourcing the operation, companies can force the cultural change needed to reduce their costs.

There are companies like EDS that would prefer to have a complete outsourcing facilities contract. In order to secure such a contract, the service provider would have to show that they can perform better that the IS department. In regard to application development and maintenance functions, the service provider would have to demonstrate that they can build and maintain information systems faster, cheaper, and more effective than the IS department.

The long-range answer to the challenge of the outsourcer for IS departments is to begin to do effective business information systems planning and then to build those systems that are critical to the companies' ability to compete in the 1990s and beyond. To do this requires a commitment to technology - specifically CASE technology. The way that service providers will win systems development and maintenance contracts from IS departments will be by using proper planning methodologies and CASE technology to implement those systems. If IS departments do not embrace CASE technology they could find themselves at a big disadvantage.

In 1986, most software professionals and IS management had not even heard of the term CASE, but by the end of the 1980s it became central to the strategic direction of IS departments. (9) The landmark MIT study, Management in the 1990s, lists CASE as an important ingredient in one of their seven major findings - Revising the Product Life Cycle.

Perhaps a definition of CASE is appropriate at this point. One such definition is: Any software tool that provides automated assistance in the creation, maintenance, or project management of software systems. (16) This definition supports the notion that there is much assistance required in order to develop effective and flexible systems. CASE can be viewed as an integrated collection of tools, techniques, and methods used to automate the software development life cycle. (14)

> **CASE is more than a technological issue - it is a people issue as well. Change brings resistance. Understanding can lessen resistance.**

Lest you be led to assume that CASE technology is the "silver bullet" that you all have been waiting for, some words of caution are appropriate. While advocates of CASE claim many benefits: higher productivity, higher quality systems, easier to maintain systems, and more responsive systems, there are costs and risks associated with implementing CASE. (3) Before you can begin to use CASE technology for systems development, you must first have a systems development methodology in place. You must also recognize that CASE is more than a technological issue - it is a people issue as well. Change brings resistance. Understanding can lessen resistance.

Also, there can be some variations between the traditional systems life cycle and the CASE life cycle. The traditional systems life cycle basically has six steps. They are: analysis, design, development, systems testing, acceptance testing, and installation and operation. There can be some differences in some of these steps, for example Prototyping would affect the SDLC somewhat if you used CASE tools. If a corporation has a corporate data model and a central repository, then there could be a major difference in the SDLC. This new SDLC can be used by all application

developers. Having more information available to developers in advance shortens the development process. With this type of system architecture the six CASE SLDC steps would be: business software planning, architecture definition, business area analysis, design, development, and operational management.

To go into a little more detail about the CASE steps, business software planning incorporates the organization's strategic plan into the software development life cycle. The architectural definition phase partitions the enterprise model into discrete business areas for future analysis. Business area analysis is involved with developing a set of requirements specifications for the business area. The design phase is where the models developed during the business area analysis phase are transformed into design specifications. Producing working program products and training users are done during the development phase. Lastly, operational management involves supporting the new system in the production environment. (14)

As a result of this new SDLC, roles change, new skills are needed, and changes in company culture take place. There are costs associated with training and retraining in this new methodology. Successful implementation of CASE technology and methodology is more than just a technical issue; it involves staff as well. IS managers must realize that their staffs, like any other employees, often have a strong resistance to change. As a result, IS managers must insure that the proper training program, technical support, and commitment are in place before beginning a CASE implementation. (18) One measure of readiness suggests that there are at least eight dimensions.

1. Motivation - level of commitment to improving productivity and quality

2. Investment - willingness to invest needed capital

3. Skills - ability to incorporate concepts into work actions

4. Education - knowledge of concepts that are the foundation for using tools and techniques

5. Culture - willingness to innovate

6. Organizational Support Structure - to support innovation

7. Technology Platform - technology in place today

8. Applicability - dominant work focus (e.g.; new development, support) (13)

It must be kept in mind that while it may take time for IS departments to determine how best to use CASE technology, and mistakes will occur during this process, something has to be done to reduce systems development backlogs and to build faster, more effective, and responsive systems. A disturbing fact is that IS departments generally have a two to three-year backlog of systems requests, demand for systems development personnel is growing, and the supply of IS and Computer Science graduates is declining. The answer to this dilemma is to increase the productivity of the existing systems professional. (3)

In a study by Deloitte and Touche in 1989, more than 2,200 IS departments were polled regarding the impact of CASE tools in their organization. Of this number, 568 departments responded - a 26% rate of return. Slightly less than one-third of the respondents reported the use of CASE tools. Of this percentage, about half reported that they had worked with CASE tools less than two years. (5) It would seem that the proliferation of CASE tools is not as widespread as some would have you believe.

Yet, improvements in systems analysis and design effectiveness and productivity were clearly demonstrated in a study of New York Life Insurance, a Fortune 500 corporation, and its experience with CASE technology. On the question of improved effectiveness, 71% of the systems analysts stated that the use of CASE tools improved their effectiveness. On the question of productivity, 64% of the analysts stated that CASE tools improved their productivity. (18) There is no reason to doubt that the opportunity for these percentages to increase is a real possibility with increased familiarity as well as enhancements to these tools. Even Kodak,

while outsourcing much of its IS function, has recognized the importance of developing new systems in-house, and is actively using CASE tools for development of world-wide applications. (2)

CONCLUSION

As we find ourselves in the final decade of the 20th century, we must be willing to make revolutionary changes in the way we do business, employ people, and use technology. The carefully planned management of change in organizations is critical to survival. (6)

Many corporations believe that their competitive advantage hinges on the successful use of CASE technology. CASE may be the most profound change ever to hit the software industry and ultimately have more impact on our business and industries than the industrial revolution. (9)

The question that looms large for IS departments is whether they, with top management support, will develop the culture to successfully move to this critically needed technology and methodology or find themselves outsourcing the very heart of their IS function - systems development and systems maintenance. There is no question that the service providers recognize the significance of CASE technology and stand poised with a staff of IS professionals who are becoming well-versed in this critical technology. IS executives must look to CASE technology as another strategy for

both competitive advantage as well as the in-house control of their systems development function.

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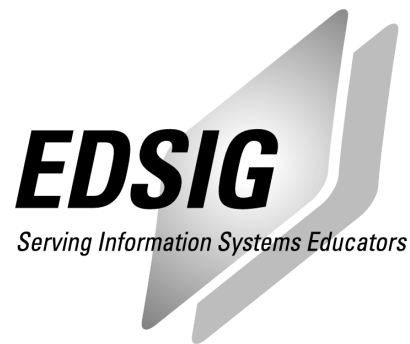
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