Strategic Planning for Information Resources:
The Evolution of Concepts and Practice

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The evolution of planning for information systems is reviewed in terms of practice and underlying concepts. Current trends in IS planning are identified and evaluated based on the evolution that has taken place through three eras of IS planning.

During the early to mid 1970s, strategic business planning was approaching the zenith of its popularity as a formal process and organizational activity in United States corporations. Most major corporations had large planning staffs and conducted an extensive annual planning process that comprehensively examined the strategic choices involving the firm's missions, objectives, strategies, strategic programs and budgets.

These strategic planning processes were typically a combination of "top down" and "bottom up" in the sense that they were initiated when general policies, guidelines, and environmental assumptions were promulgated by top management and their corporate planning staffs, while the plans themselves were typically prepared at business unit levels and sent upward for consolidation and review. In most corporations, all business units and most key functions were involved in this process (King & Cleland, 1978).

The information systems (IS) function was not a very active participant in business strategic planning in most large corporations at that time. Because the then-current view of IS was that of a "cost center" or expense, the IS

budget was generally established on the basis of prior years' budgets. IS planning was thereby generally limited to ensuring adequate computing capacity and to planning for specific IS projects (McLean & Soden, 1977).

As the potential for employing IS in various strategic fashions became more apparent, the extension of strategic business planning to encompass more extensive IS planning, and the application of strategic planning methods in the IS area, began to emerge (King, 1977; King & Cleland, 1975). The literature and practice of IS was importantly influenced by these ideas in the mid to late 1970s (King, 1978; McLean & Soden, 1977). By the end of the decade, these practices had become commonplace in United States corporations. In the 1980s, Strategic Planning for Information Systems (SPIS) has been consistently identified at or near the top of the major "issues" facing the field (Brancheau & Wetherbe, 1987; Dickson, Leitheiser, Wetherbe & Nechis, 1984; Hartog, C. and M. Herbert, 1986).

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As the 1980s come to a close, there are reasons to believe that the adoption of these IS planning innovations may have proceeded to, or past, the point of maximum effectiveness. Major changes in the ways that businesses perform their SPIS are currently underway. The fact that some medium-sized firms have not yet seriously begun to do SPIS while other firms are performing SPIS in an advanced planning mode, suggests that IS strategic planning practices in business are almost as diverse as are the ways in which businesses employ computing resources.

This paper will review the practices and conceptual bases of the rapidly-changing field of strategic planning for information resources (SPIR) and assess the current and future status of theory and practice in the area.

The Pre-Strategic IS Planning Era

In the "pre-strategic" era of IS planning, IS managers were primarily concerned with assessing the future computing needs of the business and ensuring that adequate and appropriate computing capacity was available to fulfill those needs. An associated planning task was that of evaluating and selecting the applications and systems development projects that would be funded and implemented. At the project level, project plans were developed to ensure that appropriate milestones were identified and that specific activities and tasks were assigned to appropriate IS professionals (McLean & Soden, 1977).

The Systems Life Cycle

The systems development life cycle (SDLC) was the primary conceptual basis for planning in this era. The SDLC for information systems evolved from the basic SDLC notion for complex systems. This theory postulated that the development of all complex systems naturally evolved through a sequential series of phases that were most appropriately managed in different ways, and which demanded different mixes of resources to compete effectively and efficiently (Cleland & King, 1968).

Forecasting and Project Selection

In the pre-strategic era, the multi-project levels of planning—capacity planning and project selection and evaluation—were based on the concepts of forecasting and project selection respectively. Capacity planning involved the forecasting of computing requirements and planning for the installation and testing of new

generations of hardware and software. Project evaluation and selection were conceptually based on the project selection methodologies that had largely been developed and used in the research and development (R & D) context (Souder, 1988).

The Cost Avoidance Criterion

Because "cost avoidance" was the major criterion for project evaluation in this pre-strategic era, this project selection procedure was relatively straightforward, primarily involving the estimation of the costs that could be avoided if manual systems were to be automated. This criterion resulted in the approval of projects that were primarily at the operational or operational control levels. Those projects that substituted computer systems for human operatives or those that measured and controlled the performance levels of operations were accepted as cost-effective for the organization (Anthony, 1965). Projects whose rationale depended on the benefits (e.g., increased revenues) that they might produce were difficult to justify because of the emphasis on the cost avoidance criterion.

The IS Master Plan

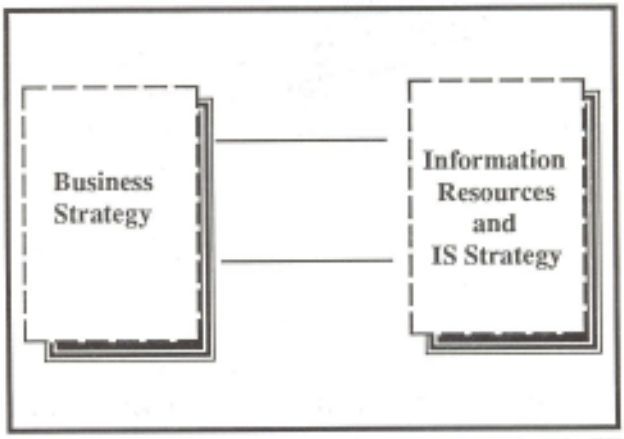
The highest level plan that came into being in some firms during the latter part of this pre-strategic era was the "IS master plan." This plan demonstrated the intended relationships among the various systems and subsystems that the organization operated or planned to develop. The need for a master plan was recognized by firms with independent and incompatible systems. While the systems were individually effective to operate, they could not be readily integrated to provide information that might be of use to higher-level management. Illustrative of this situation were the many banks that had developed expensive and operationally effective product-oriented computer systems. Their checking account systems, loan systems and trust systems, for example, had data bases that were not cross-referenced to enable a marketing manager to readily determine which of the bank's many services were utilized by a given customer.

The master plan was intended to ensure systems integration. The adoption of this notion by the IS function was the precursor to the IS strategic planning era.

The Early SPIS Era

As the ideas of strategic business planning permeated into IS, strategic planning for IS (SPIS) concepts and practices was rapidly developed. The most basic concept is the simple one depicted by the right-facing arrow in Figure 1. This diagram illustrates the organization's information resources and IS strategy to be derived from its business strategy. In the earlier era, IS evaluation and development had been primarily driven by capacity requirements and applications development proposals rather than by the substance of business strategy. Only in those instances in which the primary IS project criterion—cost avoidance—happened to coincide with business strategy was there such a relationship.

Figure 1 *



*Adapted from King, William R., "Strategic Planning for MIS," *MIS Quarterly*, 1978.

In other cases in which the business was following something other than a cost leadership strategy, there may have been little relationship between the business strategy, the IS strategy, and the information systems that were being developed in the business. This incongruity led to anomalies such as businesses that were following diversification strategies, but which had no computer support or access to data bases that would facilitate the evaluation and selection of potential business acquisitions. Some firms embarked on "niche" strategies with neither sophisticated data nor methods to analyze and identify market segments with highest potential for profit.

The simple idea of deriving the IS strategy directly from the business strategy and of developing the IS resources that best supported the business strategy had profound effect on IS planning and on IS development activities. When IBM incorporated the notion into its widely-known Business Systems Planning (BSP) methodology, these notions came into widespread use (IBM, 1981).

A More Sophisticated Criterion

This expanded use of IS necessitated a change from the simple cost avoidance IS project selection criterion that had been in common use in industry to more sophisticated criteria that gave greater consideration to the potential benefits that might result from an IS project. Because cost remained a necessary consideration and benefits were often intangible and difficult to quantify, the net result was a multidimensional criterion that was conceptually similar to those that had been in use in R & D project selection for some time (Souder, 1988).

For the first time in the history of many firms, IS applications whose benefits were intangible and did not promise the layoff of clerks or the disposal of filing cabinets came to be given higher priority. The result was that top managers developed a greater appreciation of the IS function as a potential contributor to the business rather than viewing IS merely as a service function that could be treated much like the company's heating, lighting, water, and other service systems.

System Implementation

This growing importance of the IS function to the business caused, or occurred concurrently with, an increasing emphasis on system implementation. The term "implementation" had been used, and still is used, in computer circles to mean the achievement of the specified technical operationality for the system. A system that is implemented is one that is performing appropriately in the technical sense.

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The new emphasis on system implementation that occurred in the late 1970s reflected a broader practical view that included both technical operationality and "organizational fit." Thus, according to this expanded notion of system implementation, a system was not successfully implemented unless it achieved both "technical validity" and "organizational validity." A system was to do what it was supposed to do technically and was to be used in the fashion in which it was intended to be used in the organization (Schultz & Slevin, 1975). The early days of the computer era were filled with anecdotes of systems that were implemented in the technical sense but not in the organizational sense because they were not used to the extent, and in the way, that they were intended to be used, even though

their technical functioning was adequate.

This increasing emphasis on the extent and nature of systems usage, rather than an exclusive focus on whether systems performed according to their technical specifications has led to the notions of "user friendliness" and "user satisfaction." "User satisfaction" measures have come into common use in assessing the efficacy of systems, while "user friendliness" is a term so widely known and accepted today that the term is cliched (Bailey & Pearson, 1983).

The Expanded Life Cycle

The expanded planning horizons for IS and the emphasis on assessing and evaluating systems in more sophisticated ways has been conceptualized in terms of the expanded life cycle shown in Figure 2 (King & Srinivasan, 1983, pp. 87-107).

There, a simple version of the "traditional SDLC" is shown imbedded in a broader life cycle that also includes strategic planning, systems planning, evaluation, and divestment phases. These phases serve to extend the traditional SDLC, which applies to a single system, to a broader organizational context.

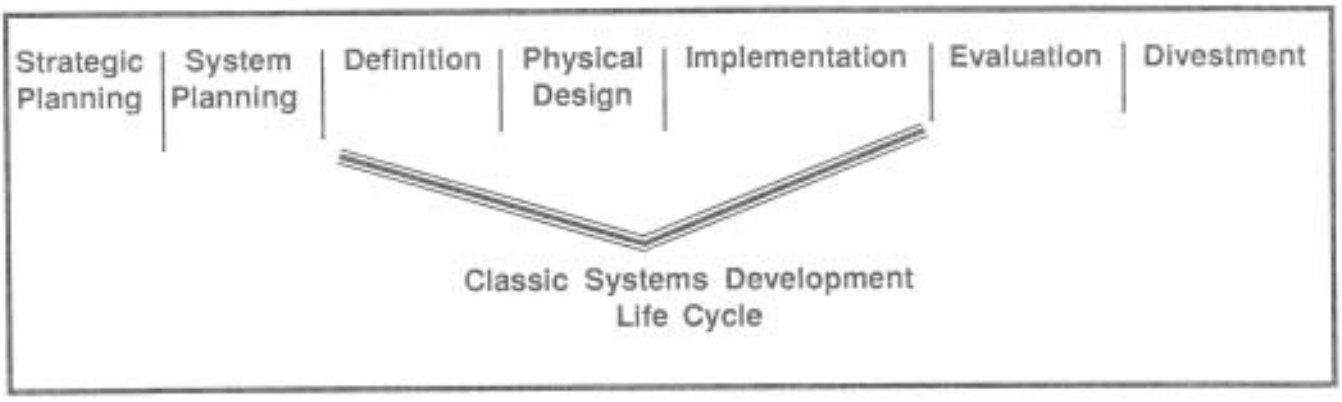
The systems planning phase primarily involves the sort of systems integration functions that are implicit in the earlier notion of a "master plan." The strategic planning phase involves the development of an IS strategy that is derived from, and which directly supports, the business strategy.

In Figure 2, the two phases that are shown to begin after the traditional SDLC—evaluation and divestment—reflect the growing attention that is paid to formal evaluation of systems. A "user satisfaction" measure is perhaps implemented to complement traditional cost, time, and technical performance measures. The two phases further recognize that an IS, like any complex system, has a finite useful life. The divestment phase not only reflects the need to phase out systems, but the need to plan for the phasing out, replacement, and disposal of systems. In the earlier eras of IS planning, little attention was given to divestment, leading many firms to make the implicit assumption that systems would function forever. This assumption inevitably leads to decisions concerning systems maintenance, updating, and modification that might be significantly different under the assumption of a finite useful life span for the system.

Strategic Planning for Information Resources (SPIR): The Modern Era

In the 1980s, the notion of SPIS was expanded to include the idea described by the left facing arrows in Figure 1. The illustration suggests that information resources could become a basis for business strategy as well as being supportive of business strategy. This idea,

Figure 2: Expanded Systems Development Life Cycle



enunciated by King and Zmud (1981), has come to be a basic concept of the IS field in this decade (King, 1985).

Strategic Systems

Various terminologies such as "strategic systems,"and "competitive weapons," are used to describe systems that impact the product-market strategies of businesses. A large number of systems, presumably of this variety, have been described (Sabherwal & King, 1988). Most familiar are Merrill Lynch's Cash Management Account (CMA), a "new product" whose core technology is information processing, and American and United Airlines reservation systems, which have been employed to achieve comparative advantages in the marketplace rather than merely as operational service systems.

The Information Resource Concept

This new view of "information resources," as contrasted with "information systems," reflects both the greater strategic importance of computer-related entities and the rapid development of a wide variety of useful technologies that greatly transcend the traditional computer hardware and software dimensions of IS. Local area networks, wide area networks, data-base management systems, word and document processing, expert systems and many other technology-based entities must now be integrated into an overall set of information resources that must be jointly managed. A business can utilize these entities much as it has traditionally employed its human, financial, and physical resources on a selective basis. Moreover, the strategic role of data and information per se, without regard to the technology that is used to collect, process, and disseminate it, is increasingly being recognized (King, Grover, & Hufnagel, 1987).

The Sustainable Comparative Advantage Criterion

The evolution of the criteria used to evaluate and select systems has moved toward a focus on "sustainable comparative advantage" in the era of strategic systems. Systems that have the potential to produce an identifiable advantage over competition, sustainable over time, are those that will be given highest priority. Systems that promise cost avoidance or temporal competitive advantage will generally be less highly valued (unless, of course, in the former case, cost leadership is a strategy that is intended to produce advantage in the marketplace) (King, et al., 1987).

The Future of SPIR

Currently, there are at least two major evolving practices and concepts in the field of strategic planning for information resources (SPIR): the evaluation of SPIR processes and the integration of SPIR with business planning. These practices appear to foretell of new SPIR modes in the future.

Evaluation of SPIR

However widespread the practices of SPIR have become, and however great the face validity of the notions, little evaluation of the effectiveness of these practices has been conducted. A few anecdotal or case studies, (McFarland, 1971; Pyburn, 1983) suggested that improved business performance might result from, or at least be related to, the firm's IS planning activities. Until recently, no rigorous empirical studies evaluated the practical worth of these planning processes and few companies have formally evaluated their own planning systems (King, 1983, 1988).

A recent comprehensive study by Raghunathan and King (1988) gives credibility to the notion that many firms may have over-

developed their information resources planning activities. Just as strategic business planning in the late 1970s was perceived to have "taken on a life of its own" in terms of increased reliance on formal planning processes and the devotion of ever-increasing time and effort to these activities and processes SPIR may have come to be overly formalized and overly burdensome in the 1980s.

Every management tool has a point of diminishing marginal effectiveness. Few managers who come to accept a new tool in terms of its face validity and the early beneficial results that its application produces, have the ability to readily recognize that point. The implicit assumption is that if a little SPIR is good, more must be even better. The result may often be excessive expenditures on planning, ever greater degrees of formality and organization, and a consequent lessening of the flexibility and creativity that characterizes the introductory phases of most planning activities.

"Coupled with the view of information resources as just one of the various kinds of resources that a general manager can employ to achieve business objectives, many companies have embarked on the integration of SPIR with overall strategic business planning processes."

The Raghunathan and King (1988) study suggests that companies derive greater impact from their "systems planning" and "plan implementation" activities (those that are aimed at integration and getting the plan actually translated into action) than they do from their IS strategic planning. Moreover, the study suggests that companies who have most developed their levels of planning activity derive lesser incremental benefits than those with lower levels of planning development. Thus, the current situation seems to cry out for moderation in SPIR.

Integration with Business Planning

The recognition of SPIR as a "free-standing" activity may be beginning to reach the limits of its incremental value. Coupled with the view of information resources as just one of the various kinds of resources that a general manager can employ to achieve business objectives, many companies have embarked on the integration of SPIR with overall strategic business planning processes. Although this trend is not universal, it is clearly identifiable, and if successful, will undoubtedly become a major theme of future developments in the area.

When strategic planning for information resources becomes a process conducted under the aegis of the business general manager with the heavy involvement of non-IS personnel, it will have emulated the evolution of IS from a back-room technical service function to one that is not only important to the business but also includes the significant involvement of non-IS (the proverbial "end-user") personnel.

Summary

Strategic planning for information resources (SPIR) is a sophisticated planning process. Its integration into business planning processes parallels the increasing regard of information resources as one of the important resources at the disposal of business managers in the pursuit of their business objectives. This development vividly contrasts with earlier eras when computer systems were back-room service functions of limited importance to business and when information systems planning was a straightforward capacity and requirements-driven process.

This increasingly important and visible role for the IS function and for SPIR represents both opportunity and challenge for the field. In earlier eras, failures of computer systems were

largely invisible and relatively insignificant in the overall business performance context. Even then, a few failures of IS were highly publicized and may not have seemed so insignificant to those who were personally involved. Now, problems and failures are consistently more significant and more visible. In the future, it is almost certain that just as we now tell stories of businesses whose success has been based upon the ability to competitively exploit information resources, we shall also have the opportunity to describe businesses whose doom was sealed by their inability to do so.

While there are those who believe that the few anecdotes of strategic systems evolving from the thought processes of an insightful CEO are significant, if strategic benefits are to be routinely and widely achieved through information resources, the model case will inevitably involve thoughtful, careful, and formal strategic planning for information resources. The evolution that SPIR has gone through in its three eras suggests that this will occur and that SPIR processes will produce even greater benefits in the future than they have thus far.

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