Profiles of Strategic Information Systems Planning

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Improving strategic planning within the realm of information technology management is consistently identified by top corporate executives as a critical competitive issue. While relevant literature in the area is replete with descriptions of planning tools and methodologies, investigations that examine this activity from the perspective of process-based characteristics, or "profiles," are still in the formative stages. Through multivariate analysis of data gathered from 253 organizations, the findings of this study suggest that five distinct profiles of strategic planning can be identified based on dimensions of *comprehensiveness* (extent of solution search), *formalization* (existence of rules and procedures), *focus* (extent of innovation versus integration), *flow* (top-down, bottom-up), *participation* (number and variety of planners), and *consistency* (frequency of planning). While each profile exhibits strength across particular measures of planning effectiveness, the profile associated with all measures of planning effectiveness seems to incorporate elements of rationality (high comprehensiveness, high formalization, control focus, top-down flow) and adaptation (high participation, high consistency). Postsurvey field study of selected firms suggests that the five approaches may represent distinct "schools" of thought that are reflective of deep-seated beliefs and attitudes about strategic planning. These schools (*design, planning, positioning, learning,* and *political*) are founded on very different assumptions and provide substantive interpretation for the empirical findings.
(*Strategic Planning*; *Planning Effectiveness*; *Cluster Analysis*; *Qualitative Analysis*)

Introduction

Strategic planning has long been recognized as one of the "fundamental" activities of top management (Ansoff 1987, Mintzberg 1978, Lorange and Vancil 1977). Typically, this activity is undertaken to reduce uncertainty, coordinate the efforts of organizational members, establish dialogue and lines of communication among various organizational subgroups, and proactively search for business opportunities within the competitive domain. While the logic and purpose of strategic planning are readily understood, the actual process and its appropriateness within the context of the organization is rather complex. Approaches to planning are varied, as are the results of the planning effort (Hart 1992, Chakravarthy 1987, Bourgeois and Brodwin, 1984). Therefore, a major focus within the literature of strategic management continues to be the conceptualization of planning process dimensions (or systems), and their association with measures of effectiveness (Kukalis 1991). This research agenda has taken on added urgency with the arrival of hypercompetitive industries, importance of knowledge management

1047-7047/99/1003/0199$05.00

among senior management teams, and increased dynamism in products and markets (Hart and Banbury 1994).

In contrast to the broader process emphasis found in strategic management literature, a majority of studies within the realm of information systems (IS) have focused on the development of tools and methodologies for conducting strategic planning (Lederer and Sethi 1996). These methods are designed to aid IS planners in aligning their strategies with those of the organization (Teo and King 1997, King 1988); identifying opportunities to utilize information technology (IT) for competitive advantage (Porter and Millar 1985); or analyzing internal processes and patterns of data dispersion throughout the organization (Goodhue et al. 1992). Largely due to this emphasis on technique development and description, there has been a tendency within IS research to conceptualize the process of strategic IS planning (SISP) by presence (i.e., planner vs. nonplanner) or choice of known methodologies (Lederer and Sethi 1988). Given the ever-increasing presence of IS in transforming markets, organizations, and products (Kambil and Van Heck 1998, Tam 1998, Bakos and Nault 1997), it has become apparent to observers in the field that such characterizations of planning are narrow (Teo and King, 1997, Byrd et al. 1995, Das et al. 1991, Sambamurthy et al. 1993), or simply inaccurate (Chan et al. 1997, Earl 1993). Further, it has been suggested that strategic planning activities within IS have much similarity with organizational strategic planning systems (Chan et al. 1997, Henderson and Sifonis 1988, Hufnagel 1987, Venkatraman 1985) and, therefore, should be conceptualized and operationalized in similar terms. As suggested by Earl (1993), the development of such conceptualizations is an important step towards better understanding the nature of planning profiles and the rationale for their adoption by Chief Information Officers (CIOs) in the accomplishment of strategic planning.

Drawing upon the theoretical and operational perspectives of IS and strategic management literature, the purpose of this study is to identify and describe profiles of SISP across multiple dimensions of the planning process and assess the efficacy of these profiles across multiple dimensions of planning success. Importantly, the study utilizes both survey and field study techniques for collection and analysis of data. This dual approach is adopted to scientifically identify emergent profiles of planning across a number of organizations and provide a substantive context for describing the beliefs, attitudes, and experiences that may underlie each emergent profile. In the three sections that follow, the theoretical development of the study's variables is set forth. The first and second of these sections develop process and effectiveness dimensions of SISP. The third section focuses on emergent profiles of planning and their association with measures of planning effectiveness. The next set of sections describes the methodological approach of the study; in particular, the method of data collection, operationalization of research variables, and analytical technique. This is followed by the results of empirical testing as well as interpretation of the empirical findings derived through field study of selected organizations. The closing sections of the paper outline potential limitations and implications of the study.

Strategic Information Systems Planning: Six Dimensions of the Planning Process

Many studies within the area of strategic management have as their primary purpose the examination of planning process dimensions and their emergent structure or profile across organizations (Chakravarthy and Doz 1992, Hart 1992, Kukalis 1991, Venkatraman and Prescott 1990, Fredrickson and Iaquinto 1989, Chakravarthy 1987, Ramanujam and Venkatraman 1987, Fredrickson 1986, 1984, Fredrickson and Mitchell 1984, Lindsay and Rue 1980). Through empirical and qualitative analysis, these studies have sought to identify process characteristics of strategic planning that are independent of a particular method and yet manifest across a variety of organizational and environmental contexts. Over time, this line of research has become a useful basis for creating common dialogue and consistency in describing the process of organization-level strategic planning.

Although less explicit and far less evolved in terms of empirical testing, research within IS has also investigated general design characteristics of SISP, emergent profiles of planning, and differences in effectiveness

among profiles (Teo and King 1997, Sabherwal and King 1995, Byrd et al. 1995, Earl 1993, Sambamurthy et al. 1993, Das et al. 1991, Raghunathan and Raghunathan 1989, Pyburn 1983). In general, these studies have not formally integrated the theoretical and operational foundations of strategic management literature, yet many of the identified planning concepts, processes, and profiles seem parallel in context and definition to those of organization-level strategic planning (Byrd et al. 1995, Hufnagel 1987, Venkatraman 1985). To gain a clearer definitional context for describing potential process characteristics of SISP, extensive analysis and reconciliation of research in both strategic management and IS were undertaken by the authors. Together, these streams seem to suggest that six broad process dimensions are useful in characterizing the activity of strategic planning. These dimensions are *comprehensiveness*, *formalization*, *focus*, *flow*, *participation*, and *consistency*. In the paragraphs that follow, these characteristics and their supporting literature are discussed.[1]

Comprehensiveness

Within the literature of strategic management, a rather well-grounded feature of the strategic planning process is the emphasis placed on being *comprehensive* in making and integrating decisions (Fredrickson 1984, 1986, Fredrickson and Mitchell 1984). Janis and Mann (1977) conclude that this construct has a multitude of behaviors including, (1) the thorough canvassing of a wide range of alternatives; (2) surveying a full range of objectives; (3) carefully weighing the costs and risks of various consequences; (4) intensively searching for information to evaluate alternative actions; (5) objectively evaluating information, or expert judgment regarding alternative actions; (6) reexamining the positive and negative consequences of all known alternatives; and (7) making detailed plans—including consideration of contingencies—for implementing a chosen action. Utilizing this and other multifaceted characterizations of the construct, Fredrickson (1984, p. 402) formally defines comprehensiveness as "*the extent to which an organization attempts to be exhaustive or inclusive in making and integrating strategic decisions*." This definition, widely adopted among researchers in strategic management, has also been utilized by researchers in IS to describe the extensiveness or scope of solution search in strategic planning efforts (Lederer and Sethi 1996, Sabherwal and King 1995, Sambamurthy et al. 1994, Sambamurthy et al. 1993, Das et al. 1991). In general, organizations must balance the benefits of consistency and integration associated with thorough decision analysis with the costs of inaction, managerial time, and financial resources. As suggested by observers in both IS (Sabherwal and King 1995, Sambamurthy et al. 1994) and strategic management (Eisenhardt 1989, Mintzberg 1978, Quinn 1978), within some competitive contexts it may be more appropriate to "satisfice" rather than optimize in identifying and evaluating strategic alternatives.

Formalization

Another distinct process characteristic of strategic planning that is well grounded and consistently defined in both IS (Sabherwal and King 1995, Lederer and Sethi 1996, Premkumar and King 1994, Das et al. 1991, Pyburn 1983) and strategic management (Dutton and Duncan 1987, Quinn 1978, Camillus 1982) literature is *formalization*. Formalization refers to the existence of structures, techniques, written procedures, and policies that guide the planning process. A highly formalized planning system is a more rationalized process for constructing strategic plans. Such systems are characterized by written policies that structure the process of planning; formalized techniques adopted for the purpose of conducting strategic planning; and/or known procedures for initiating the planning process. Ideally, formalization produces efficiency gains for both the receipt and processing of information. Formalized planning processes systemize information collection and dissemination, thus facilitating the identification and storage of strategic issues. These efficiency gains translate into an organizational capacity to consider a greater number of strategic issues. However, gains in efficiency accruing from a formalized process must be balanced against reduction in issue flexibility. In other words, a formalized process may retard prompt and efficient elimination of strategic issues once they become unimportant or resolved. In the context of SISP, striking this balance between structure and rapid resolution of strategic issues is viewed as a key feature in

[1]This discussion draws from and expands the prior work of Segars et al. (1998).

the design of a planning process (Reich and Benbasat 1996). In essence, planning must be structured such that a wide variety of opportunities for supporting strategy and creating new strategic opportunities are identified, yet the planning process must facilitate the rapid resolution of strategic issues in order to adapt plans to ever-changing competitive and technological conditions (Lederer and Sethi 1996, Sabherwal and King 1995, Earl 1993).

Focus

As developed within the strategic management literature, *focus* refers to the balance between creativity and control orientations inherent within the process structure of strategic planning (Chakarvarthy 1987). While initially defined as a distinction between a control orientation through strict accounting and budgeting versus a creative orientation through idea generation and entrepreneurship (Lorange and Vancil 1976), recent work has expanded the definition to include a distinction between orientations of *innovation* versus *integration* (Chakravarthy 1987). Although not as explicitly defined, this definitional context is closely aligned with recent studies in the realm of IS (Lederer and Sethi 1996, Sabherwal and King 1995, Byrd et al. 1995). An *innovative* orientation nurtures creativity through systematic search for opportunities and/or threats in the competitive environment. In essence, looking outside of the company into the competitive environment initiates the search for opportunity. Once these opportunities become manifest, introspection of corporate resources is undertaken to assess corporate readiness. Conversely, an *integrative* orientation tends to focus more on control through coordination and integration of corporate activity. Such a system is sometimes tied to the regular accounting and budgetary systems of the organization and is concerned with issues such as resource allocation, cost-performance measures, and controlled diffusion of assets within the organization (Byrd et al. 1995, Bowman et al. 1983, Chakravarthy 1987). In contrast to the *innovative* approach, the *integrative* approach tends to seek opportunity within the resource structures and processes of the organization and then scans the environment for avenues of competitive exploitation.

Flow

The roles played by corporate and divisional managers in the initiation of the planning process is well grounded in strategic management literature as an important design characteristic of strategic planning (Dutton and Duncan 1987). Based on the locus of authority or devolution of responsibilities for strategic planning, *flow* is typically described as "top-down," from top management to lower levels of the organization, or "bottom-up," from lower levels of management to higher corporate levels (Chakravarthy 1987). A top-down planning flow is characterized by limited participation of lower-level managers in the initiation of the strategic planning process. In essence, top management and corporate staff assume responsibility for formulating all new strategic moves. Therefore, the role of functional or business unit managers within such a system is post hoc strategy implementation. Conversely, a bottom-up planning flow is characterized by high levels of functional management involvement in the initiation of strategic planning. In these instances, the planning process begins with ideas and proposals submitted by operational and functional managers as inputs into the overall corporate plan. The role of top management is that of overseer or gatekeeper, reconciling the proposals of various organizational subunits into an overall plan for the organization. Research within IS describes aspects of planning flow in terms very similar to that of strategic management. Byrd et al. (1995) identify the origin of planning activity as a defining process characteristic in their study of planning activity within the governmental sector. Similarly, Earl (1993) and Pyburn (1983) note that profiles in SISP can be described and differentiated based on the initiation of planning activity.

Participation

Whereas planning *flow* is concerned with the vertical orientation of the planning system, *participation* captures the breadth of involvement in strategic planning. Although initially developed in strategic management literature (Dyson and Foster 1982), core grounding for this dimension of planning process is readily identifiable in recent studies exploring SISP (Lederer and Sethi 1996, Sabherwal and King 1995, Byrd et al. 1995, Earl

1993, Das et al. 1991). As noted in these studies, organizations may vary in the number of planners involved, representation from various functional areas, and amount of lateral communication in the planning process. Planning structures with narrow participation profiles foster an isolated approach to plan formulation with little involvement or interaction among various functional or operational managers. In some organizational contexts this phenomena may be associated with a "top-down" planning flow (Byrd et al. 1995, Earl 1993). Such an approach may be deemed necessary due to a lack of business or "strategic" knowledge among lower level managers. An alternative rationale may be the stability and number of strategic issues that must be considered in formulating the strategic plan. If such issues are few and relatively stable, then the participation of many managers may slow examination of alternatives and, subsequently, decision speed (Lederer and Sethi 1996, Byrd et al. 1995, Eisenhardt 1989). In contrast, broader participation profiles include many planning participants from a variety of functional and operational areas. Such an approach is sometimes associated with a "bottom-up" planning flow and may be necessary to offset the "bounded rationality" of top managers inundated by the complexity and dynamic nature of the competitive environment (Sabherwal and King 1995, Das et al. 1991).

Consistency

An important design dimension of planning grounded in strategic management literature that examines speed of decision making (Eisenhardt 1989) and strategic adaptability (Kukalis 1991, Judge and Miller 1991, Chakravarthy 1987) is *consistency*. This planning dimension captures the frequency of planning activities or cycles as well as the frequency of evaluation/revision of strategic choices. Within the study of SISP, *consistency* has also been identified as a differentiating characteristic among planning profiles (Lederer and Sethi 1996, Sabherwal and King 1995, Earl 1993). Specifically, it has been reported that some organizations engage in planning activities infrequently. In such instances, the time frame of strategic plans is likely to be longer, face-to-face meetings among planning participants will typically be ad hoc or sporadic, and planning cycles may be a year-to-year phenomena versus a continuous or consistent process (Byrd et al. 1995, Earl 1993, Pyburn 1983). Such an approach may be justified in contexts where strategic issues surrounding IS are relatively few and stable (Sabherwal and King 1995, Premkumar and King 1994). In contrast, high levels of *consistency* are characterized by a continuous planning process with frequent meetings, constant communication among planning participants, and frequent assessment and revision of strategic direction. Such planning consistency may be necessary to increase decision speed (Sabherwal and King 1995, Premkumar and King 1994), facilitating rapid adaptation to unexpected changes in the internal organization environment or external competitive environment (Das et al. 1991).

Patterns of Process Dimensions: A Planning Profile

Within the literature of strategic management, a *planning system* or *planning profile* is defined as a structured (designed) set of process dimensions that organizes and coordinates the activities of managers who do the planning (Hart 1992, Ansoff 1987, Lorange and Vancil 1977). While it is certainly feasible that other process dimensions may be important in defining a profile of planning, many of the profiles uncovered in the literature of strategic management and SISP are based on the relative position of organizations with respect to one or more of the dimensions defined above. Further, these profiles are sometimes interpreted as a manifestation of managerial beliefs, attitudes, or past experiences with strategic planning and thereby provide a useful context for understanding how and why planning occurs within the organization. Importantly, process dimensions collectively define the conduct of the strategic planning activity; therefore, exploration of planning profiles across a robust set of process characteristics provides a meaningful framework in which to describe the activity and compare its execution. Further, differences in planning profiles across organizations are likely to result in differences across dimensions of planning effectiveness. The nature of these potential outcome dimensions with respect to the activity of SISP is discussed in the following section.

The Effectiveness of Strategic IS Planning

One of the most intuitive and widely applied metrics for measuring strategic IS planning success is based on

the notion of "goal-centered judgment." This evaluative perspective seeks to assess the degree of attainment in relation to targets (Ramanujam and Venkatraman 1987). A typical question in this mode is, *To what extent are the multiple objectives (or goals) of planning fulfilled?* King (1988) terms this evaluative dimension "IS planning Effectiveness" and bases its assessment on "measurement against purpose." Clearly, organizations may differ in terms of the number and specific goals for SISP; however, there are general objectives that all strategic planning systems should strive to obtain. Within the context of general planning, Ramanujam and Venkatraman (1987) as well as Raghunathan and Raghunathan (1994) tap this perspective in developing constructs of "planning system success." Specifically, Venkatraman and Ramanujam (1987) identify six important goals for planning (enhancing managerial development, predicting future trends, short-term performance, long-term performance, gathering relevant information, and avoiding problem areas) and empirically demonstrate their validity in capturing the extent of "key" objective fulfillment. Raghunathan and Raghunathan (1994) utilize many of these goals in developing constructs and a factor structure for measuring the effectiveness of general IS planning.

Another useful theoretical approach highlighted in the literature is "improvement judgment." Within this perspective, a typical question is, *How much have the planning capabilities of the system improved over time?* In other words, the focus here is on assessing how the planning system has evolved or improved *over time* in supporting organizational planning needs. This approach is particularly useful in cases where the system is in its initial stages and has yet to reach steady state (Lorange and Vancil 1977). However, within any context, the evaluation of past performance relative to current performance is an important indicator of system effectiveness. King (1988) draws heavily upon this perspective in developing a framework for evaluating SISP. In essence, he suggests that planning evaluators should determine longitudinal patterns in (1) the relative efficiency in use of financial and personnel resources devoted to SISP; (2) the actual use of strategic plans; (3) the contribution of SISP to organizational performance; and (4) changes in IS strategy resulting from changes in business strategy. When examined over time, these metrics can give IS managers useful insight in determining how SISP has improved in terms of resource use and organizational contribution. Ramanujam and Venkatraman (1987) as well as Raghunathan and Raghunathan (1994) incorporate this perspective in their operational definitions of planning system success.

Collectively, both of these perspectives represent the "ends" (the output of the planning system) and "means" (the evolution of the process) view of evaluating planning system benefits and, as important, are consistent with much of the evaluative literature within SISP (Earl 1993, Hufnagel 1987, King 1988, Goodhue et al. 1992). As noted by Delone and McLean (1992), it seems likely that most aspects of effectiveness with respect to IS and IS management are complex. In essence, multiple, interrelated success dimensions, which are themselves measured by multiple indicators, are more likely to accurately capture changes in performance in contrast to an all encompassing item or set of financial measures. Based on an extensive review and analysis of literature as well as expert opinion, four dimensions of SISP effectiveness seem particularly manifest.[2] These dimensions are *alignment*, *analysis*, *cooperation*, and *improvement in capability*. The first three constructs represent "goals" for SISP while the last construct represents "improvement" in SISP over time. Although other aspects of planning success are certainly possible, these dimensions are consistent with the two theoretical approaches described above and encompass a majority of themes and objectives that are reflective of SISP effectiveness (Segars and Grover 1998).

Alignment

It is generally accepted that one of the key factors for successful IS planning is the close linkage of the IS strategy and business strategy (Reich and Benbasat 1996, Baets 1992, Henderson and Venkatraman 1993,

[2]Multiple steps were followed, based on Churchill's (1979) paradigm for construct development. The complete description of these steps is available from the authors on request. The steps include a review of 150 articles in leading IS outlets, identification of 50 SISP objectives, review by seven IS executives and eight IS academics, Q-sort analysis, and formal interviews.

Das et al. 1991, Henderson et al. 1987, Bowman et al. 1983, King 1978). This linkage or *alignment* helps facilitate acquisition and deployment of information technology that is congruent with the organization's competitive needs rather than existing patterns of usage within the organization (Bowman et al. 1983). Alignment may be evidenced through an understanding of organizational objectives by top IS planners (Lederer and Sethi 1988, Lederer and Mendelow 1986, King 1978), a perceived need to change IS objectives in light of changes in corporate strategy (King 1988, Das et al. 1991), mutual understanding between top managers and IS planners (Boynton and Zmud 1987, Earl 1989), and a heightened view of the IS function within the organization (King 1978, Lederer and Sethi 1988).

Analysis

When IS planners make a concerted effort to better understand the internal operations of the organization in terms of its processes, procedures, and technologies, a degree of *analysis* is realized. Many studies within SISP have focused on issues surrounding "self-analysis" (Teo and King 1997, Lederer and Sethi 1988, Brancheau et al. 1989, Boynton and Zmud 1987, Henderson et al. 1987, Hackathorn and Karimi 1988). In essence, the IS organization seeks to better understand the processes, power bases, and existing technologies that characterize the firm. Many of the objectives related to this broad dimension address the drive to identify better ways of operating and competing through use of information technology. Other objectives address the need to build an "architecture" of integrated applications and databases across the functional boundaries of the organization. In general, effective analysis should provide a clear understanding of how information is used within the organization and uncover critical development areas.

Cooperation

When general agreement concerning development priorities, implementation schedules, and managerial responsibilities is reached, a degree of *cooperation* is attained. This level of cooperation is important in order to reduce potential conflict which may jeopardize the implementation of strategic IS plans (Henderson 1990). In essence, IS planners must ensure that "key" coalitions and bases of power within the organization are supportive of the process and content of SISP. Additionally, it is important to obtain a general level of agreement on development priorities and a level of coordination concerning development standards and IT use among organizational subgroups. Such actions reflect the importance of creating a partnership between IS and user groups for successful implementation efforts (Henderson 1990).

Improvement in Capabilities

An effective planning system should improve over time in its basic capabilities to support the organization. Ramanujam and Venkatraman (1987) formally define and operationalize this effectiveness criteria as *improvement in capabilities.* Within the context of SISP, the organizational learning that accompanies planning experience should result in improved capabilities to achieve alignment between IS and business strategies, analyze and understand the business and its associated technologies, foster cooperation and partnership among functional managers and user groups, anticipate relevant events and issues within the competitive environment, and adapt to unexpected organizational and environmental changes.

Profiles of Strategic Planning and Strategic Planning Effectiveness

Ideally, process dimensions of planning profiles should complement each other, forming a collective structure that reflects the unique requirements of the planning task (e.g., planning strategically for information systems). Across organizations, varying planning profiles represent differences among top managers in beliefs, attitudes, and experiences about the successful accomplishment of strategic planning. When planning systems are favorably matched with task requirements, robust aspects of planning effectiveness should be realized (Das et al. 1991). In contrast, profiles that are not well aligned with planning tasks are likely to exhibit limited or no aspects of planning effectiveness (Pyburn 1983).

Planning Profiles as Patterns of Rationality and Adaptability

A useful means of framing the variety of planning profiles and associated dimensions of effectiveness that

may result from varying combinations of process dimensions is across broad attributes of rationality and adaptability (Chakravarthy and Doz 1992, Mintzberg 1978, Pyburn 1983, Camillus 1982, Quinn 1978). Rationality is the tendency of a planning system to be analytic, visible, and well organized. This characteristic may be built into strategic planning through higher levels of comprehensiveness (Sabherwal and King 1995, Sambamurthy et al. 1994, Frederickson 1984), higher levels of formalization (Lederer and Sethi 1996, Byrd et al. 1995, Das et al. 1991, Dutton and Duncan 1987), a focus on integration (Byrd et al. 1995, Boynton et al. 1992), and top-down planning flow (Byrd et al. 1995, Chakravarthy 1987). Together, these process dimensions form a profile for planning that reflects the importance of making optimal decisions, coordinating planning activities, and planning to top management (Sabherwal and King 1995, Premkumar and King 1994, Kukalis 1991, Chakravarthy 1987).

Adaptability refers to the capability of the planning system to "learn" (Reich and Benbasat 1996, Lederer and Sethi 1996, Sabherwal and King 1995). In other words, the planning system should contain design characteristics that will alert managers to changing organizational and environmental conditions that may require changes in strategy. Adaptability may be designed into a strategic planning system through wide participation profiles (Byrd et al. 1995, Sambamurthy et al. 1993, Das et al. 1991, Dyson and Foster 1982) and through higher levels of planning consistency (Judge and Miller 1991, Eisenhardt 1989). Such characteristics reflect the importance of gathering information from a number and variety of sources and of constantly reconciling strategic decisions with environmental conditions.

Within the context of IS research, Pyburn (1983) notes the existence of planning profiles that seem to traverse the extremes of rationality and adaptability as well as the middle ground between the two extremes. Specifically, within the *written-formal* profile of SISP, a very rational (structured) process of written rules and procedures, top-down planning flow, budgetary focus, and narrow participation profiles seem present. In contrast, the *personal-informal* profile reflects a more adaptable approach based on few guidelines or policies, bottom-up planning flow, creativity focus, and a broader participation profile. The hybrid approach (*personal-formal*) reflects aspects of both extremes and is described as an approach that incorporates consistent planning within a structured set of guidelines. Although each of these profiles exhibit certain strengths and weaknesses, Pyburn notes that the *personal-formal* approach tends to facilitate the identification of new technological opportunities within a framework of formal reconciliation with the strategic initiatives of top management.

Similar to Pyburn, profiles of planning developed by Earl (1993) tend to distinguish SISP approaches based on amounts of rationality and adaptability built into the planning system. Specifically, the *organizational approach* is reflective of a hybrid profile similar to Pyburn's (1983) *personal-formal* approach. In this planning profile IS strategies seem to emerge from ongoing organizational activities such as trial and error changes to business practices, continuous enhancement of existing applications, and system experiments within the business. In essence, organizational themes as well as polices, participation, and consistent planning exercises are used to formulate IS strategy. In contrast, the *administrative approach* exhibits completely rational characteristics of rules and procedures, budgetary control, narrow participation profiles, and annual or semiannual planning activities. Other approaches identified by Earl (1993) (*method, business,* and *technological*) also tend to follow a rational profile. Consistent with observations by Pyburn, Earl notes that the hybrid *organizational* system of planning seems to achieve success across many aspects of planning effectiveness.

Studies by Sullivan (1985), and more recently by Sabherwal and King (1995), Chan et al. (1997), as well as Teo and King (1997), also seem to suggest that planning systems vary across broad dimensions of rationality and adaptability. Further, these studies imply that the most effective forms of planning seem to be those that exhibit a combination of rational and adaptive dimensions. Specifically, Sullivan (1985) notes that "complex" systems of SISP rely on formal structures and guidelines, as well as constant reconciliation, thereby allowing the firm to more effectively adapt to ever-changing competitive and technological environments. Sabherwal and King (1995) note this same effect in

"planned" and "incremental" systems of strategic decision making. Together, these as well as the aforementioned studies provide a foundation for drafting general expectations about the number and nature of planning profiles as well as their relationship with planning effectiveness.

Research Propositions

As developed in the prior sections, the intent of this study is to identify and describe profiles of SISP across multiple dimensions of planning process (*comprehensiveness, formalization, focus, flow, participation,* and *consistency*) and assess the efficacy of these profiles across multiple dimensions of planning success (*alignment, analysis, cooperation,* and *improvement in capabilities*). The preliminary evidence described within IS literature seems to imply the following propositions:

Proposition 1. *There will be* many *profiles of SISP systems with varying degrees of rational and adaptive dimensions.*

Proposition 2. *The most effective planning system will exhibit attributes of* both *rationality and adaptation.*

These propositions will be empirically examined using a carefully designed survey of a large cross-sectional population of senior IS managers. Substantive interpretation of resulting profiles will then be developed through in-depth field study of selected firms. The next section more fully describes the chosen methodological approach.

Methodology

The use of key informants has been a popular approach within empirical IS studies. In contexts of field study, a triangulated interviewee set of IS managers, general managers, and users provides a useful context for data collection (Earl 1993). However, in the context of large-scale survey, studies in the field typically rely on the responses of chief information officers (CIO), vice presidents of operations, or directors/heads of IS groups for issues regarding strategic, organizational, and/or managerial issues (Munro and Wheeler 1980, Pinsonneault and Kraemer 1993, Premkumar and King 1992, Raghunathan and Raghunathan 1988). For issues pertaining to system development or use, systems analysts, programmers, or end users are utilized as key respondents (Pinsonneault and Kraemer 1993). While such practice has become an accepted norm in the field, very few studies provide a formal rationale for choosing the key respondent; or more importantly, employ structured procedures to insure that responses of key informants are as accurate as possible. In the absence of a strategy to obtain accurate data, results are likely to be confounded and conclusions erroneous. Huber and Power (1985) propose several guidelines for improving the accuracy of reports gathered from key respondents. Appendix A relates these coping strategies with potential sources of data inaccuracy and also outlines the tactics utilized in the present analysis to improve respondent accuracy.

Sampling Frame and Sampling Procedure

As noted by Lederer and Sethi (1988), research designs within the domain of SISP do not readily lend themselves to scientific sampling techniques. The primary rationale for this assertion is the fact that not all firms participate in SISP activities. For some organizations, information technology is not considered a strategic asset, thereby lessening the importance of formal strategic planning exercises. Still others may simply believe that SISP produces no organizational benefits. Therefore, in the context of SISP, a sample of firms randomly drawn from a sampling frame of all business entities may not imply that the criteria of a scientific random sample have been met (Scheaffer et al. 1990).

Within this study, a nonscientific method of sampling is employed. The sampling frame adopted is the East Edition of *The Directory of Top Computer Executives*.[3] This index contains the names, titles, addresses, and phone numbers of top computer executives in the Eastern half of the United States. The entities within the directory include Fortune 2000 firms (manufacturing and service), educational institutions, hospitals, and governmental agencies. In developing a desirable subframe, all hospitals, educational institutions, and governmental agencies were eliminated from consideration. The rationale for the removal of these entities lies in the fundamental difference in profit motive and subsequent focus of planning activities between public and private firms (Lederer and Sethi 1988). Next, the

[3]*Directory of Top Computer Executives,* 1995. Applied Research Co., Phoenix, AZ.

job titles of respondents remaining in the frame were examined as a means of determining the level of planning activity (Raghunathan and Raghunathan 1988). Firms with a senior executive carrying the job title of chief information officer, vice president, director of strategic planning, or director of MIS were retained. This resultant subframe contained 1100 business entities. From this frame, 600 firms were chosen at random. Although it is problematic to generalize sample results to all business entities, such designs are considered entirely appropriate in explanatory studies that examine unique or complex phenomena (Pinsonneault and Kraemer 1993).

Measurement Methods

Because single-item measures tend to frame concepts narrowly, the measurement of complex psychological or organizational phenomena is typically accomplished through the use of multi-item scales (Churchill 1979). In developing measurement scales, the investigator should, when possible, use or adapt existing measurement scales for the research purpose. This practice facilitates the reconciliation of new findings with those of past studies. In situations where scales have yet to be developed, relevant literature should be carefully analyzed to provide a theoretical context for describing the variable in terms of content and complexity (Venkatraman and Grant 1986). To further insure efficacy in measurement, a panel of experts (i.e., academics, practitioners in the area) should be utilized as a means of gaining additional context and definition for the variables of interest. Within the present study, each of these mechanisms was employed in the development of item measures for the six planning process dimensions as well as the four planning effectiveness dimensions. In addition, the Q-sort technique (Moore and Benbasat 1991), in which experts and/or potential respondents group items according to their similarity, was conducted among a panel of experts (senior IS executives and academics) as a means of assessing item purification and content validity. The following paragraphs outline the theoretical underpinnings and supporting literature of the item measures.

Variable Measurement

Within the literature bases of strategic management and IS, general support can be found for operationalizing key aspects of *comprehensiveness*, *formalization*, *focus*, *flow*, *participation*, and *consistency*. A list of the items associated with these planning process dimensions can be found in Table B1 of Appendix B. Planning *comprehensiveness* has been widely operationalized within strategic management literature. Initially, Fredrickson (1984) developed and tested multiple indicators of this construct as a measure of planning process scope. Recent definitions of this construct have refined and recast the initial measures such that they focus more on the extent of solution search within the planning process (Fredrickson and Mitchell 1984, Fredrickson and Iaquinto 1989, Kukalis 1991). Within this study, these measures are adopted.

Planning system *formalization* has been conceptualized and empirically tested in works by Dutton and Duncan (1987) as well as by Chakravarthy (1987). In both of these studies, the indicators of this planning construct exhibit strong measurement properties and are closely associated with theoretical work within SISP that describes aspects of planning formality (Das et al. 1991, Earl 1993, Pyburn 1983). Using these theoretical studies, the initial scales developed within the strategic management literature were slightly reworded to conform them to the context of strategic IS planning.

Planning system *focus* has received significant empirical attention within strategic management literature (Chakravarthy 1987, Lindsay and Rue 1980). Items for this measure are drawn from these operationalizations as well as theoretical studies within IS (Byrd et al. 1995, Sambamurthy et al. 1994). Similarly, the notion of planning *flow* has been subject to empirical study in strategic management (Chakravarthy 1987, Dutton and Duncan 1987, Linday and Rue 1980, Wood and LaForge 1981) and limited theoretical examination in IS (Byrd et al. 1991). The measures adopted here are drawn from empirical studies by Chakravarthy (1987) as well as by Dutton and Duncan (1987). The recasting of these measures for the context of SISP is based on work by Byrd et al. (1995) Earl (1993), Das et al. (1991), and King (1988).

Planning *participation* has a rich theoretical and operational base to draw upon. Dutton and Duncan (1987), Fredrickson and Iaquinto (1989), Chakravarthy (1987), and Kukalis (1991), as well as Premkumar and King (1992) develop and utilize multiple scales for

measuring breadth of planning participation. *Consistency,* typically assessed by frequency of planning cycles, has been examined and measured in studies by Lindsay and Rue (1980), Dutton and Duncan (1987), Eisenhardt (1989), and Kukalis (1991). These measures have been recast in light of SISP process characteristics described by Sabherwal and King (1996), Lederer and Sethi (1996), Das et al. (1991), as well as Premkumar and King (1994).

Relative to the planning process dimensions described above, there has been sparse empirical work in the area of strategic planning effectiveness. Therefore, expert analysis and Q-sort techniques were utilized to generate and classify items representing objectives of *alignment, analysis,* and *cooperation.* Results of a Q-sort exercise confirmed the existence of these goal-fulfillment factors and the adequacy of the developed scale items in capturing their nature. The fourth factor, "improvement in capabilities," reflects the ability of the planning system to continuously improve in its support of organizational functioning. Ramanujam and Venkatraman (1987) as well as Raghunathan and Raghunathan (1994) empirically validate measures of this planning success measure within the context of general planning. These measures include the ability to identify problem areas, generate new and novel ideas, identify new business opportunities, and adapt to unanticipated changes. Such capabilities have also been identified within IS literature as important components of evolving planning systems (King 1988). Utilizing these measures, along with the key objective criteria of *alignment, analysis,* and *cooperation,* measures of planning capabilities were derived. These measures are found in Table B2 of Appendix B. Detailed discussion of the derivation and assessment of these scales can be found in work by Segars and Grover (1998).

Pretesting

In preparation for large-scale data collection, all items and the survey instrument were pretested by 23 senior IS executives. Similar to the targeted respondents of the survey, each of these managers was actively involved in strategic IS planning and each had significant experience with the field of IS management. All organizations were visited by one of the researchers and face-to-face interviews were conducted with each manager. Assessments were made regarding the items, constructs, and completeness of the instrument. Some items were slightly refined, and a preliminary assessment indicated that there was a high degree of internal consistency among scale items. Upon satisfactory refinement of the items and survey format, the instrument and cover letter were mailed to the organizations of the sample.

Response Profile

Within two weeks, 65 responses (11.8% of surveys mailed) were received. Within three weeks, an additional 128 responses (23.2% of surveys mailed) were received for a collected total of 35.1%. Within five weeks, an additional 58 surveys (10.5% of the total mailed) were received for a collected total of 45.6%. The remaining surveys were collected in the sixth and seventh week after the initial mailing for a total response of 47.63%. This response rate is markedly higher than that usually realized in comparable IS studies (Pinsonneault and Kraemer 1993, Premkumar and King 1992, Raghunathan and King 1988) and can perhaps be attributed to the targeted nature of the mailing and incorporated incentives. Nine responses contained incomplete data or were otherwise unfit for analysis and were subsequently eliminated, thereby yielding an effective response rate of 46.8%. The collected sample consists primarily of manufacturers (48.2%), followed by finance/insurance entities (17.4%) and wholesale/retail (14.2%), and is skewed toward larger firms with about 95% having sales over $100 million and 54% with sales over half a billion dollars. The majority (73%) of the respondents are either just below or two levels below the CEO, suggesting consistency between research question and organizational informant. In sum, the data collection process yielded 253 distinct assessments of strategic IS planning process and strategic IS planning effectiveness.

Assessment of Measurement Efficacy

Upon collection of data, confirmatory factor analysis (CFA) was utilized as a means of obtaining variables free from random error and high in consistency of definition. Appendix B presents a general overview of this approach. Detailed discussion of measurement modeling through CFA can be found in works by Segars

(1997), Gerbing and Anderson (1988), as well as Bagozzi and Phillips (1982).

The measurement properties for the final models of both planning process and planning effectiveness are presented in Tables B1 and B2 of Appendix B. As shown, relatively little adjustment in terms of item deletion is required as a result of measurement modeling. Overall, the parameter estimates, fit indices, and composite reliabilities imply that these models are a good fit for the observed correlations among their respective items. In each case, the χ^2 value is relatively low and the GFI and AGFI fall within acceptable ranges (Jöreskog 1993). RMSR is 0.05 (or less) and all indicator reliabilities are sufficiently high and statistically different from zero. The residual matrix for each measurement model contains no values significantly different from zero, and the composite reliabilities of each construct are all above 0.70. In each instance, the average variance extracted (AVE) is above 0.50, indicating that the variance captured by the respective construct is larger than the variance due to measurement error (Fornell and Larcker 1981). Results of pairwise χ^2 difference tests among constructs within each theoretical system (planning process and planning effectiveness) suggest that each construct is significantly unique from other constructs, providing evidence of discriminant validity (Gerbing and Anderson 1988). In sum, the results of CFA suggest that each scale is significantly unique and captures a significant amount of variation in each associated latent dimension of strategic planning and strategic planning success.

Using the factor loadings (λ) obtained through CFA, the multiple items for each construct of planning process and planning effectiveness were collapsed into a composite factor score (see Appendix B). Factor scores represent measurement that is free from random error (Hair et al. 1992) and facilitate the identification of planning profiles through multivariate data reduction techniques as well as the statistical assessment of differences in planning effectiveness across emergent groups. These calculations reduced the data set to a matrix of 253 observations (rows) across 10 variables (columns). This reduced matrix was used as a basis for multivariate grouping of process dimensions through cluster analysis as well as statistical assessment of differences in planning effectiveness through multivariate analysis of variance (MANOVA).

Multivariate Grouping Through Cluster Analysis

Several multivariate statistical as well as judgmental approaches can be employed to develop groupings (profiles) across a series of variable measures. Although each may be more appropriate under differing circumstances, cluster analysis is typically utilized to examine patterns in complex variables across organizations within both strategic management (Cool and Schendel 1987) and IS (Segars and Grover 1995) literature. Although several clustering algorithms exist, Ward's minimum variance criterion was chosen for this analysis based on past practice and its accuracy in identifying clusters in several simulation studies (Punj and Stewart 1983). The clustering criterion of this technique is minimization of total within-group sums of squares. In other words, objects (in the present case firms) are assigned to clusters (or groups) based on how similar they are to existing members across all measures of the strategic planning process. As the clustering algorithm progresses, it eventually joins all objects into a single cluster. Hence, cluster solutions range from a single cluster containing all firms to n clusters each containing a single firm. In determining the appropriate cluster solution, the statistic pseudo F is used. This statistic is defined as the mean square between groups divided by the mean square within groups. Various clustering solutions are plotted against pseudo F. "Jumps" or "elbows" in the plot are then used to identify the appropriate number of clusters to retain. Examination of other statistical criterion, namely root mean square and semipartial R square, is often used to confirm visual conclusions.

Once clusters of firms have been identified, multivariate analysis of variance (MANOVA) techniques can be employed to explore the existence of performance differences. Within this research, differences between clusters are examined across the four dimensions of SISP effectiveness.

Interpretation of Statistical Groupings

While cluster analysis is a very useful data reduction technique, its application is based on heuristics rather than properties of statistical distributions. Although careful adherence to the procedure outlined above can reduce its misapplication, triangulation of these quantitative results, using qualitative methods, can provide

a powerful basis of validation and extension. As a supplement to exploratory techniques such as cluster analysis, field study is often employed to provide substantive interpretation for patterns of interrelationships and systems of shared meaning among a set of complex variables (Kaplan and Duchon 1988). Field study is an open-ended examination of complex phenomena in which the investigator observes, probes, and questions primary and secondary sources regarding theoretical concepts of interest. In the context of business research, field study typically involves one or more researchers gathering a considerable volume of data from a single or set of targeted organization(s) as a means of formulating the clearest possible definition of the phenomenon. This data may be drawn from direct interviews and observation of organizational participants (primary sources) or through documents, records, and memoranda (secondary sources). Inherently, field study is a flexible investigatory technique: the research scope can be expanded as necessary, the focus shifted, or other sources sought as the study progresses. However, the proper execution of field research requires clearly stated goals and theoretical bases, a protocol for information gathering and analysis, carefully selected interview sites, and the cooperation of those to be studied.

Analysis of field study data must incorporate notions of construct validity in order for reported results to have any theoretical or practical meaning. Construct validity is achieved when phenomena described within the field study are free from interviewer and interviewee bias. Further, results should be at least partially generalizable to other contexts. In other words, the data should accurately and robustly represent constructs and interrelationships of interest. Three tactics are available for increasing construct validity: (1) multiple sources of evidence, (2) establishment of a chain of evidence, and (3) iterative data review. As a means of better understanding the nature of planning uncovered through empirical analysis, each of these tactics was utilized across selected firms that exhibit characteristics of each emergent profile. Specifically, multiple managers and multiple sites were studied in order to generate substantive meaning for the empirical results and create a greater understanding for the managerial attitudes, beliefs, and experiences that form the underpinning of structures used in the activity of strategic planning. The general approach is described in Appendix C.

Analysis and Results

Analysis of multiple clustering criteria strongly suggests the existence of five distinct clusters across the six strategic planning process dimensions.[4] As outlined in Table 1, the number of observations within each cluster is fairly large, ranging from 39 to 89 firms. Table 1 also contains the mean factor scores and standard deviations of the six process dimensions of SISP across all five clusters, hereafter referred to as planning profiles. Table 2 outlines the mean scores and standard deviations of the four SISP effectiveness dimensions across the five profiles. As illustrated in these two tables, the mean values of the SISP process variables as

[4]These results were very stable when assessed with different clustering methods. A split sample also yielded a four or five cluster solution, with a judgement being made on whether to combine clusters one and four.

Table 1 **Five Emergent Planning Profiles: Means and Standard Deviations of Planning Process Dimensions**

	Cluster 1 n = 42	Cluster 2 n = 40	Cluster 3 n = 43	Cluster 4 n = 39	Cluster 5 n = 89
Comprehensiveness					
Mean	8.61	17.02	5.16	12.45	19.25
Std. Dev.	(1.76)	(1.94)	(2.04)	(2.03)	(2.10)
Formalization					
Mean	9.66	19.01	7.31	14.73	21.72
Std. Dev.	(1.71)	(2.00)	(1.61)	(1.88)	(2.02)
Focus					
Mean	7.44	10.09	6.83	10.63	12.37
Std. Dev.	(1.97)	(1.44)	(1.54)	(1.53)	(1.14)
Flow					
Mean	11.85	9.22	5.68	10.47	14.87
Std. Dev.	(1.64)	(1.67)	(1.59)	(1.57)	(1.65)
Participation					
Mean	14.89	9.84	8.03	17.22	21.79
Std. Dev.	(1.34)	(1.35)	(1.48)	(1.31)	(1.94)
Consistency					
Mean	15.11	9.42	7.41	17.71	23.31
Std. Dev.	(1.86)	(1.10)	(1.96)	(1.70)	(2.07)

Table 2 **Five Emergent Planning Profiles: Means and Standard Deviations of Planning Effectiveness Dimensions**

	Cluster 1 n = 42	Cluster 2 n = 40	Cluster 3 n = 43	Cluster 4 n = 39	Cluster 5 n = 89
Alignment					
Mean	19.89	14.72	10.51	17.98	24.88
Std. Dev.	(2.11)	(2.68)	(2.82)	(2.94)	(2.36)
Analysis					
Mean	19.25	20.92	6.61	14.58	23.71
Std. Dev.	(3.13)	(2.37)	(2.53)	(2.54)	(2.60)
Cooperation					
Mean	28.27	17.38	10.37	14.19	29.85
Std. Dev.	(3.08)	(2.60)	(2.27)	(3.07)	(2.93)
Improvement					
Mean	24.33	16.58	8.97	11.59	28.55
Std. Dev.	(3.19)	(3.06)	(2.78)	(2.60)	(2.68)

Table 3 **Multiple Analysis of Variance SISP Effectiveness Measures Across Planning Profiles**

Alignment Source	DF	Sum of Squares	Mean Square	F Value	R Square
Cluster	4	1072.61	268.15	27.33 (.0001)	0.305
Error	248	2433.03	9.81		
	252	3505.65			
Analysis					
Cluster	4	1452.74	363.19	64.40 (.0001)	0.512
Error	248	1399.62	5.64		
	252	2852.36			
Cooperation					
Cluster	4	2115.91	528.98	40.50 (.0001)	0.408
Error	248	3237.81	13.06		
	252	5353.72			
Improvement					
Cluster	4	1909.13	477.28	46.47 (.0001)	0.434
Error	248	2546.57	10.27		
	252	4455.70			

well as the SISP dimensions exhibit a considerable range across profiles. This seems to further substantiate the pragmatic (rather than purely statistical) distinctions in the five types of planning processes represented. Table 3 outlines the results of multiple ANOVA tests for differences in the various planning profiles across each dimension of planning effectiveness. These results indicate that (a) the differences are significant for all four dimensions of alignment, analysis, cooperation, and improvement, and (b) the differences in planning profiles explain a significant proportion of the variance in each effectiveness dimension as indicated by the measure of R-square. Collectively, Tables 1, 2, and 3 suggest that the five-cluster solution represents meaningful differences in planning profiles across the sampled organizations.

The five emergent planning profiles are pictorially depicted in Figure 1. These profiles are scaled against the highest possible score for each respective dimension. Therefore, they provide a ratio-based estimate of the extent to which measures across each profile represent the limiting case. As implied in Figure 1, Profile 2 seems to describe companies that exhibit characteristics of the classical synoptic-formal approach to planning. Such companies conduct planning in a relatively formal, comprehensive manner, emphasizing control and budgets, with narrow participation profiles and lower levels of consistency. In contrast, Profile 3 companies seem to conduct SISP in a more "ad hoc" manner, as typified by infrequent, relatively informal, and noncomprehensive planning as well as a pattern of creativity, limited participation, and bottom-up planning flow. This type of planning system seems very different from synoptic planning, in that it represents a lack of planning, relying more on the emergence of issues from interaction and chance rather than formal framing of agenda through structure. Profile 5 exhibits attributes of both "rational" and "adaptive" models of planning. This is evidenced through the magnitude of comprehensiveness, formality, control, and top-down orientation as well as the high magnitude of participation and consistency. The other two profiles, Profile 1 and Profile 4, exhibit less distinct patterns in terms of magnitude across dimensions and seem to be mirror images of each other. In these cases, less extreme but distinct orientations of both rational and adaptive attributes seem prevalent. Collectively, the emergent profiles illustrated in Figure 1 indicate that there are many profiles of strategic planning with varying degrees of rational and adaptive dimensions, thereby providing empirical support for Proposition 1.

In order to identify specific differences in effectiveness dimensions across these profiles, Tukey's standardized range tests were conducted. Tables 4 and 5 outline the differences in the means of each dimension. Numbers in bold indicate that the differences exceed the critical value for the studentized range indicating statistical significance. Figure 2 provides a visual plot of the effectiveness characteristics of the five planning profiles. Here again, the plot is standardized on the highest value for each effectiveness dimension. The "x" marks indicate nonsignificant differences based on the results of Tukey's tests.

It seems apparent from Figure 2 that Proposition 2 is supported. The most effective planning profile

Figure 1 Mapping of Five Emergent Planning Profiles

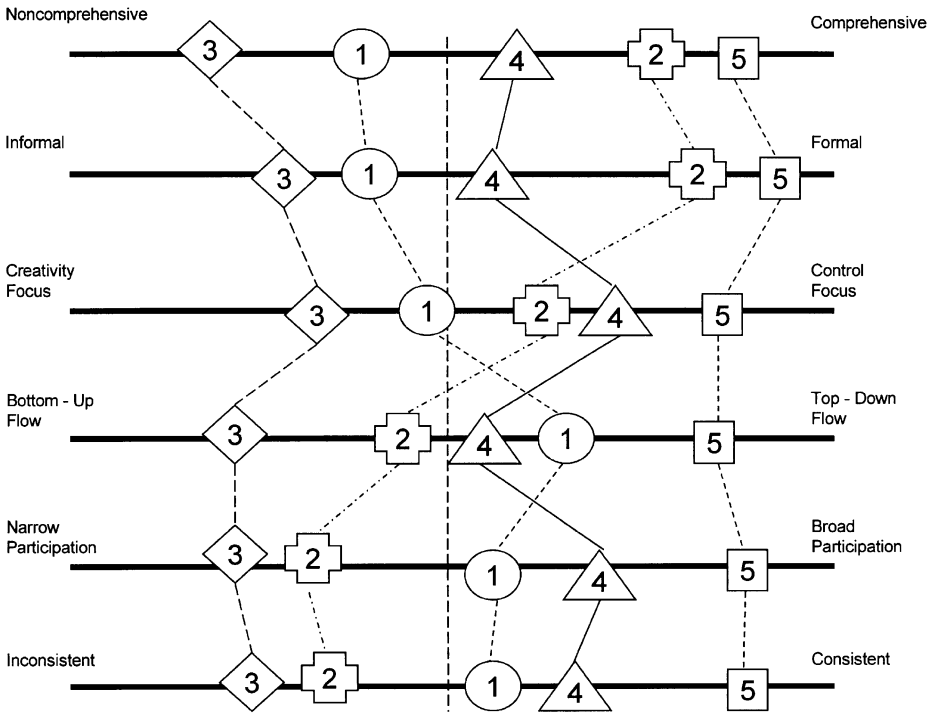


Table 4 Tukey's Standardized Range Tests: Planning Profile and Effectiveness Measures

		Mean Differences in Alignment				
		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
	Cluster 1		−5.17	−9.38	1.91	4.99
Mean	Cluster 2	1.67		−4.21	3.26	10.16
Differences in	Cluster 3	−12.64	−14.31		7.47	14.37
Analysis	Cluster 4	−4.67	−6.34	7.97		6.90
	Cluster 5	4.46	2.79	17.10	9.13	

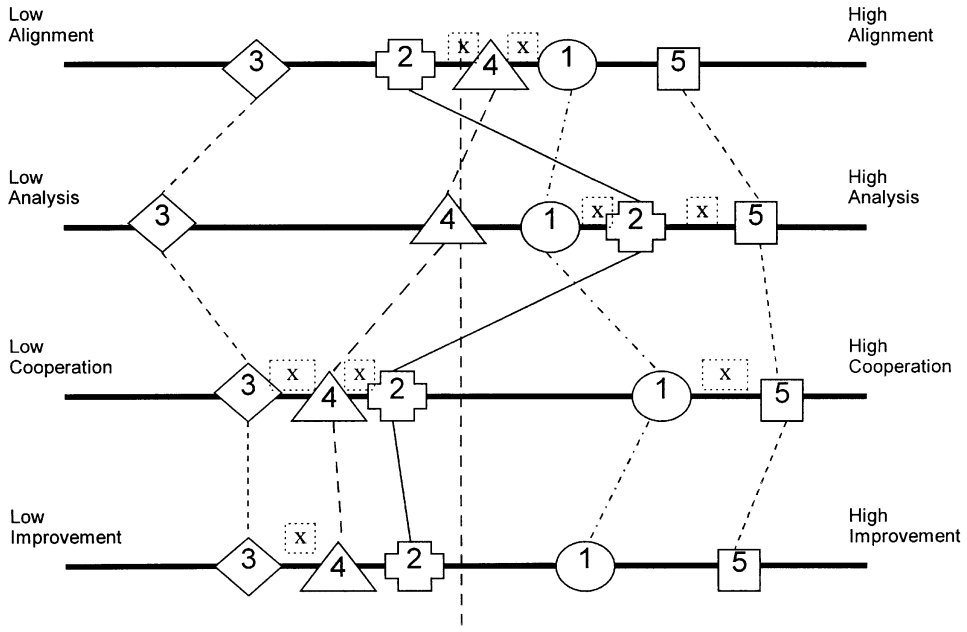
Critical value for studentized range = 4.06

Table 5 Tukey's Standardized Range Tests: Planning Profile and Effectiveness Measures

		Mean Differences in Cooperation				
		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
	Cluster 1		−5.17	−17.90	−14.08	1.31
Mean	Cluster 2	7.75		−7.01	−3.19	12.47
Differences in	Cluster 3	−15.36	−7.01		3.82	19.48
Improvement	Cluster 4	−12.74	−4.99	2.62		15.66
	Cluster 5	4.22	11.97	19.58	16.96	

Critical value for studentized range = 4.06

Figure 2 Effectiveness Characteristics of Planning Profiles



across all four effectiveness dimensions is Profile 5, which exhibits strong characteristics of rationality (comprehensive, formal, integrative, top-down) and adaptability (broad participation and high consistency). The classical planning model, Profile 2, performs well on the dimension of "analysis," but is relatively low on dimensions of "cooperation" and "improvement." This result is not entirely unexpected. Given the narrow scope of participation and formality in this profile, it can be reasoned that while the approach can be effective in understanding organizational and IS structures, it is difficult for such a planning profile to facilitate the "out of the box" thinking required for adaptation and improvement. The poorest performance of all dimensions is exhibited by Profile 3. This result suggests that unstructured profiles of planning characterized by low comprehensiveness, low formality, infrequent planning cycles, and narrow participation are not particularly effective. Finally, Profiles 1 and 4 demonstrate only limited success across effectiveness dimensions. Most noteworthy of these profiles are the high levels of "improvement" and "cooperation" exhibited by Profile 1. Such results seem to imply that the top-down tendency and somewhat broad participation characteristics of this profile directly affect the creation of partnership and coalitions as well as the continuous improvement in planning over time.

In sum, the quantitative results support the existence of a diversity of planning profiles, *and* seem to suggest, as proposed, that dimensions of rationality and adaptability collectively improve many aspects of planning effectiveness. These results seem to support findings and interpretations forwarded by Earl (1993) that suggest complex systems of planning that incorporate aspects of classical synoptic formalism and adaptive incrementalism are effective across multiple dimensions of success. However, these results explain variance and provide objectivity at the cost of a deeper understanding of the phenomenon (Kaplan and Duchon 1988). The qualitative analysis below attempts to both validate and complement the quantitative results. In doing so, a richer understanding of emergent planning profiles can be formulated.

An Interpretive Framework for Reconciling Planning System Profiles

To investigate possible interpretation behind the planning profiles uncovered through the statistical analysis, *selected firms within each cluster* were studied

through collection of documentation and memoranda related to SISP as well as multiple on-site and telephone interviews. In total, 12 firms participated in this part of the analysis. Three firms are Profile 5 members, three are Profile 2 members, and the remaining "intermediate" Profiles (1, 3, 4) are each represented by two firms. These firms were selected within each profile based on a willingness of the senior officer to participate in multiple rounds of interview and provide access to multiple managerial participants. Therefore, no claim of external validity with respect to the remaining cluster members can be guaranteed. However, a variety of participants were interviewed (5–7) within each firm for an average of one hour each, in order to capture the planning environment (see Table 6). These included senior-level IS interviewees (IS executive, assistant IS director, project managers) who were chosen based on their history of involvement in the function's strategic planning activities, functional managers (marketing, finance, operations), as well as analysts and programmers to corroborate the nature and outcomes of the IS strategic planning process. Remarkable consistency was found between the profiles implied by the emergent clusters and the experiences and self-reported profiles of participating field study firms, each acknowledging the correct classification of their organizations across the planning process dimensions. Detailed memoranda and documentation regarding activities surrounding SISP were also collected and used to validate and interpret the nature of planning within each firm. This evidence also seemed to strongly validate the accurate classification of each participating firm's planning profile through the cluster analysis.

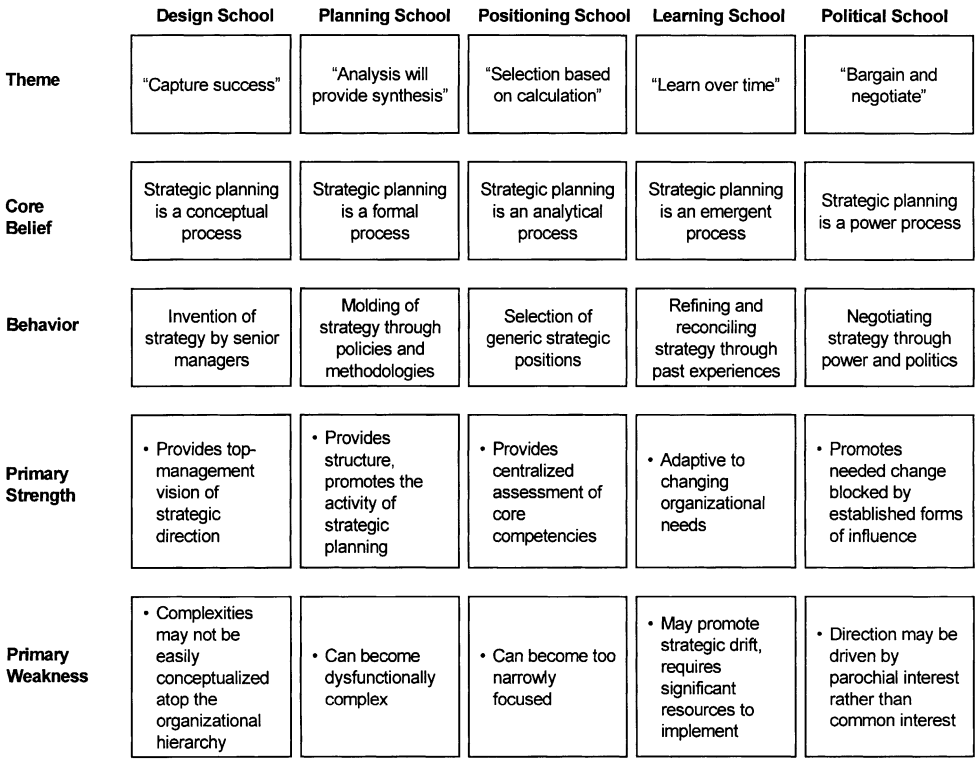
Table 6 Profiles of Interviewees

	Senior IS Executive	Assistant IS Director	Project Manager	Analysts/ Programmers	Other Functional Managers	Total
Profile 5						
Firm A	1	0	2	2	2	7
Firm B	1	1	0	2	1	5
Firm C	1	2	1	0	2	6
Profile 2						
Firm A	1	1	2	1	1	6
Firm B	1	2	1	1	2	7
Firm C	1	0	3	2	1	7
Profile 1						
Firm A	1	1	1	3	1	7
Firm B	1	1	1	1	1	5
Profile 3						
Firm A	1	1	1	2	1	6
Firm B	1	1	1	2	1	6
Profile 4						
Firm A	1	1	1	2	1	6
Firm B	1	2	1	1	1	6
TOTAL	12	13	15	19	15	74

As illustrated in Figure 3, analysis of information gathered through field study seems to suggest that the five emergent profiles represent distinct "schools of thought" with respect to the activity of SISP. Interestingly, these schools parallel many of those developed by Mintzberg (1990) in describing theoretical perspectives regarding formulation of corporate-level strategy. In the present case, however, the emergent schools are developed as a framework for representing managerial attitudes, beliefs, and experiences about the activity of SISP. In other words, these schools capture a philosophy or cognitive perspective of management that frames the entire activity of strategic IS planning. These "schools of thought" are labeled *design school*, *planning school*, *positioning school*, *learning school*, and *political school*. Interestingly, each of these schools seems to be associated with a set of activities or general approach that is closely aligned with those identified by Earl (1993). Therefore, as depicted in Figure 4, a cycle that may explain prevailing structures of SISP and reconcile previous investigation with the present study is (1) a "school of thought" that provides a philosophical basis for conducting the planning activity, (2) a general approach or set of activities that reflects managerial philosophy about SISP, and (3) a process structure that provides an infrastructure for conducting strategic planning. Based on a synthesis of field study data, interpretation for each school and its associated approach is discussed in the following sections.

The Design School. The overarching theme of the design school is the "capture of success" through the innovation and entrepreneurial activity of one or a few

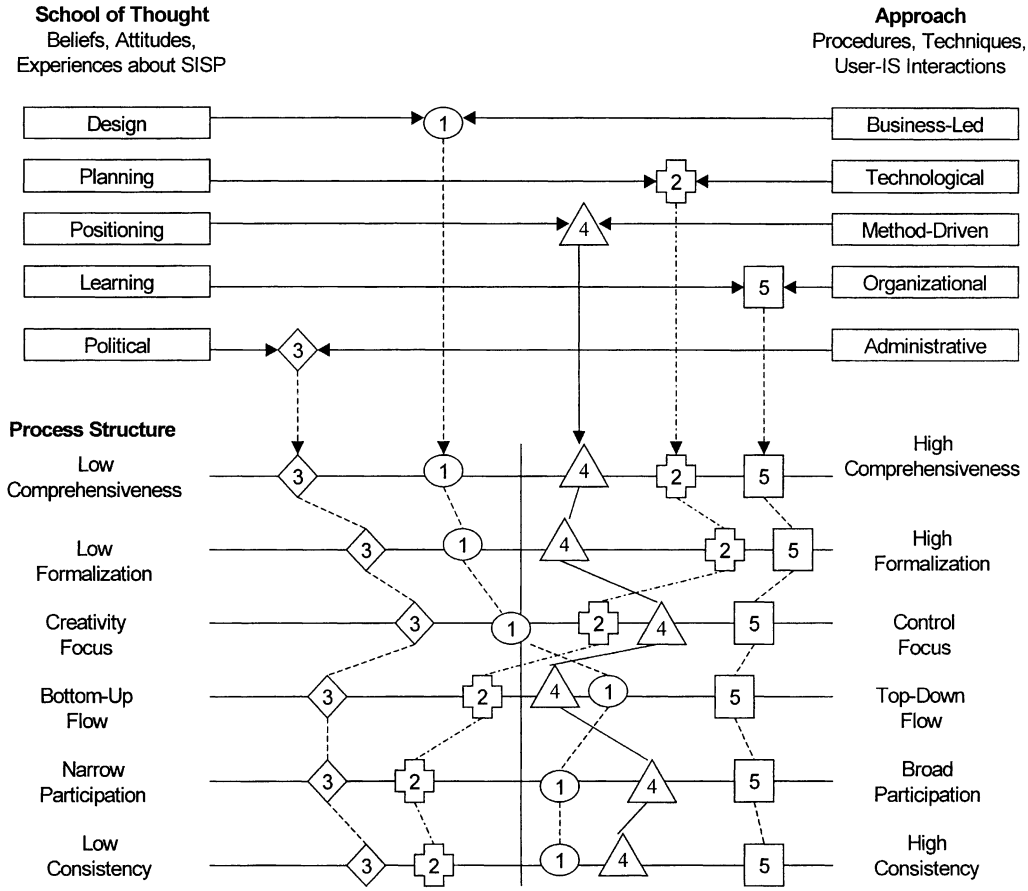
Figure 3 Planning Schools of Thought



top executives. This theme seems founded on the core belief that strategic planning is a conceptual process in which a strategic visionary analyzes and then reconciles organizational capabilities with competitive opportunity. Past planning experiences within a more formal context are generally viewed as frustrating by planners of the design school. Decision-making velocity is viewed as an essential component of identifying and launching innovative and adaptive technological initiatives and for these managers, this velocity has proven to be elusive in past formalized planning exercises. Therefore, rather than seeking to create a set of detailed plans and implementation priorities, the desired outcome of the planning process is typically a vision statement that serves as a guide for the organizational effort. In essence, the design school operates in the realm of visions, concepts, and invention. Consistent with this philosophy, the outcomes and documentation of the planning effort tend to be informal correspondence such as memorandum, brief overview statements, or a set of viewgraphs (e.g., PowerPoint presentation). The transfer of strategic intent is very informal and heavily reliant on interpersonal communication between the senior planner and key constituents. This leadership coalition then forms more detailed implementation planning exercises around the strategic themes or visions articulated by the senior executive.

The underlying dimensions of planning process for the design school are reflected by Profile 1 (moderate levels of comprehensiveness, formality, and creativity; top-down flow; and moderate levels of participation and consistency). This process structure tends to be well aligned with the primary planning behavior of this school, which is the invention of strategy through intuition, experience, and informal knowledge of corporate events. In all three firms studied, the chief information officer along with a small, select group of advisors convene at critical times during the year to discuss strategic issues. Very few policies, frameworks, or tools are used to guide the process. Instead, the outcomes of the strategic planning process are based on a

Figure 4 **Planning Schools of Thought, SISP Approach, and Process Structure**



controlled, conscious process of thought that is believed to be most effectively cultivated outside the confinement of policy or formal meetings. Strategic decisions and associated courses of action emerge from a process of creative design rather than comprehensive solution search and are typically conveyed in explicit but simple terms. To forge an accurate depiction of corporate issues, many informal contacts with lateral and vertical lines of authority are established and consistently monitored. This informal network of strategic information serves as a mechanism for aligning the initiatives of IS with those of the enterprise. Such tactics are very consistent with the "business-led approach" described by Earl (1993) and may imply that informal conversations and analysis centered on business issues are viewed by some IS planners as an effective means of understanding and reconciling corporate events.

Similar to all firms of this planning profile, the selected firms of the field study tend to realize high levels of success across the dimensions of alignment, analysis, cooperation, and improvement. A particularly noted strength of this profile is its inclination to produce an articulated and strategically aligned vision from top management. Because of the top-down orientation, this vision is generally viewed as credible by members within the IS organization as well as mangers of other functional areas, perhaps resulting in greater levels of cooperation. In addition, the visionary and top-management orientation of this profile seems to result in strategic actions that are well aligned with larger organizational goals and objectives. However, a noted weakness of this orientation is its tendency to oversimplify very complex planning issues. In some instances, the creation of a vision within the design

school results in strategies that do not address emerging complexities in the organizational and/or external environment. Many of these complexities are first identified at lower levels of the managerial hierarchy but do not become clearly defined planning issues in a timely manner.

In sum, the underlying beliefs of the design school seem to suggest that top executives "know best" and should therefore be charged with charting the strategic direction of the IS organization. Appropriately, the role of the senior planner is that of a visionary, and the underlying structure of planning strongly reflects a top-down flow of executive strategy making that is not based on finding optimal courses of action and is not overly confined by policy and procedure. Resultant strategies are drawn from information gathered across a diverse array of organizational constituencies and provide a broad but explicit agenda for creating and refining specific activities within the IS organization. These initiatives tend to be centered on business rather than technology issues and provide a context for realizing alignment but may sacrifice detailed understanding of business process and technologies.

The Planning School. The *planning school* of SISP is centered on the theme that "analysis will provide synthesis." The core belief of planners within these organizations is that strategic planning should provide a succinct and well-defined structure of activities designed to achieve a desired end. In the firms examined, the prior experiences of managers who had functioned in less-structured context seem to reinforce an assumption that planning without rigorous guidelines will lead to duplication of development efforts, uncertain development priorities, and strategic drift. These potential occurrences produce a strong "felt need" to monitor IS investment and carefully consider new developmental priorities. Therefore, planning is viewed as a means for developing detailed strategic plans with a predetermined and highly structured format. Consistent with this objective, underlying systems of planning typically tend to be linear, highly rational (e.g., annual or semiannual planning), and, consistent with the "technological approach" identified by Earl (1993), may include the incorporation of comprehensive methodologies such as BSP or strategic data planning. The detailed sets of architectures and business models as well as explicit guidelines and policy provide the primary mechanisms for communication and coordination of strategic intent.

The underlying process structure supporting the planning school philosophy is reflected by Profile 2. Higher levels of comprehensiveness and formalization support the belief that solutions should be optimal and are most likely to be discovered through structured and formal planning exercises. The activity of planning tends to be well documented and a substantive component of job description and performance evaluation. A somewhat narrow participation profile, typically characterized by rotation on and off committees, is an important feature of this school for insuring that many planning issues are considered from a wide variety of sources. Because the exercise is tied to other "core" accounting and budgeting systems, the activity of planning tends to lack consistency and flow from the bottom of the organization to the top. Such a structure seems to reinforce managerial belief that strategic initiatives must be grounded in the financial and operational data of the enterprise. In essence, strategic planning within this school is a controlled, conscious, and formalized process decomposed into distinct steps, each delineated by checklists and supported by known tools and techniques. In contrast to the broad vision statements which characterize the outcomes of the design school, detailed sets of objectives, budgets, tasks, and operating plans emerge from the strategic planning activities of the planning school.

Consistent with the findings of the cluster analysis, the organizations of the field study tend to realize extremely high levels of analysis but less than satisfactory levels of alignment and cooperation. As noted by several interviewees of the planning school firms, a significant amount of organizational resources (time, money, training) are devoted to planning activities which, in turn, implicitly promotes the activity of planning. This perceived importance brings forth a number of strategic issues that may never be considered within a design school philosophy. In addition, the inner workings of the business in terms of processes and tasks can become well documented. However, a primary drawback of this highly rational philosophy is

the threat of the planning activity becoming dysfunctionally complex. In such cases, the strategic planning system may begin to resemble a budgeting or control system that can severely limit strategic innovativeness. In addition, the velocity of planning cycles can become inordinately slow, resulting in reactive rather than proactive strategic actions. In severe cases, the guiding strategic vision of the organization can be lost in the myriad of blueprints, architectures, and models generated through hyperrational planning.

In sum, subscribers of the planning school philosophy view strategic planning as an outcome and function of structured organizational study and formal reconciliation. The managers interviewed seem to believe that strategic innovation is something that can be institutionalized rather than conceptualized. Therefore, they view their role as stewards of the planning process as well as synthesizers of information. This results in planning behavior that can be described as the molding of strategy through policy and methodology. In contrast to the design school, the senior planner tends to approve rather than create strategic plans, and the process of planning tends to be decomposed into well-defined steps as are the strategies themselves. The resultant outcome of these planning exercises is a comprehensive set of activities and benchmarks that reflect strategic intent and guide the implementation efforts of the IS organization.

The Positioning School. Profile 4 mirrors the process structure associated with a positioning philosophy of strategic planning. In many respects, the firms within this profile resemble those of the design school. A central group of top IS executives tends to control the strategic planning process—formulating strategy that is then filtered down through the organization. However, unlike the design school, generation of strategic issues and selection of strategic initiatives is based more on calculation than conceptualization. Specifically, the theme within this school is centered on the calculation and choice of tangible strategic positions rather than the development of strategic perspectives (consistent with the design school) or of well-coordinated sets of budgets and models (consistent with the planning school). Similar to the "method approach" identified by Earl (1993), in the two firms studied, these strategic positions tend to be identified through the use of high-level planning tools such as value chain analysis, critical success factors, or the balanced scorecard. The resultant strategies tend to be generic, tangible positions relative to a targeted strategic group within the industry. Consistent with this philosophy, the positioning school's underlying structure of planning, tends to be more comprehensive and formal than the design school's but less comprehensive and formal than the planning school's. Because the primary behavior of planners within this school is the selection of a generic strategic position, the planning process tends to exhibit a broad participation profile and a rather high level of planning consistency. As strongly implied in the interviews, both of these process dimensions reinforce the belief that diverse sources of perspective should be gathered in building a model of competitive dynamics and that these models need frequent updating to be useful.

Consistent with the quantitative results, the selected participants of the field study noted moderate levels of success in achieving alignment and high levels of success in realizing analysis. They also noted lower levels of cooperation and little improvement in the planning system over time. Two managers interviewed noted the centralized assessment of core competencies as a particular strength of the positioning philosophy. The combination of a simple planning framework and senior management expertise was viewed as an effective means of facilitating consistent language and dialogue regarding critical strategic issues. In one instance, top IS executives participated with senior corporate executives in building a map of their industry through a framework similar to Porter's "five forces" model. This framework was then recast in the context of technology-based industry structure in order to better align IS initiatives with those of the overall corporation. While simple in terms of mechanics, the tool has proven effective in structuring the planning process without stifling innovativeness through excessive policies and procedures. However, executives in both organizations also noted that adoption of a positioning philosophy could result in consideration of strategic issues that are narrowly focused. In essence, the strategic agenda may be biased by the

adopted technique or framework, making it difficult to generate sustained support for IS initiatives among organizational constituencies. Further, without reconsideration and reconciliation of the chosen framework with changing organizational and environmental contingencies, the process for strategic planning can regress to mediocrity.

In sum, the positioning school of thought can be conceptualized as the middle ground between design and planning philosophies. Therefore, the sets of beliefs and attitudes that underlie this school tend to be a hybrid of those found in the design and planning schools. Specifically, planners tend to believe that formal analytical mechanisms are the best means to identify strategic positions while also believing that strategy lies within the domain of executive thinking and conceptualization. Interestingly, the past experiences of the planners interviewed suggest that a positioning philosophy may be adopted in the aftermath of a planning effort that failed to identify a key industry trend or failed to identify key changes in corporate strategy. Such an experience seems to forge a belief that phenomena within the competitive domain are becoming increasingly complex and must be framed in a structured format to more accurately align corporate and IS strategy as well as eliminate lag in identifying changing competitive conditions. However, to maintain decision-making velocity and ensure a common dialogue with upper management, the developed frameworks must be businesslike in content and capable of quickly structuring managerial conversation regarding the nature of competition and feasible courses of action. The language of the resulting strategies tends to be cast in terms of positioning the IS organization within the competitive context, in contrast to a broad vision statement or detailed sets of budgets and objectives. The associated documentation tends to be graphical illustrations or maps of technological and strategic trends captured in overview documents or planning "whitepapers." In contrast to a process steward or a visionary, the role of the senior IS planner is that of a high-level analyst. Within this role, development and interpretation of the competitive domain is framed and then used as a communicative device for organizing activity.

The Learning School. The central theme underlying the *learning school* is that strategies emerge as planners, sometimes individually, but more often collectively, come to know a competitive context and their organization's capability for response. In other words, the task of strategic planning is viewed as a process of creating, acquiring, and transferring knowledge for the purpose of modifying IT-based initiatives such that they reflect new knowledge and insights. This theme is somewhat broader than the previously outlined schools in that strategic planning is considered an exercise in both knowledge acquisition and application. Over time, the organization converges on patterns of agenda and behaviors that are effective and then reconfigures these patterns for new planning challenges. The core belief of planners within the learning school is that strategy emerges as a result of formal and continuous reconciliation of ongoing initiatives throughout the organization and associated opportunities within the competitive context. Importantly, past experiences with traditional forms of planning are not necessarily perceived as ineffective by these managers; however, the lack of strategic reconciliation and the desire to institutionalize the gathering and transfer of knowledge sources throughout the organization seem to create a belief that continuous planning can better identify avenues of innovation and adaptability needed for effective competition. Consistent with this philosophy, no single activity of strategic planning seems readily identifiable within the learning school. Instead, these organizations seem to resemble a portfolio of strategic planning initiatives and approaches that are coordinated through cross-functional teams and common project themes. These ongoing strategic planning processes are reconciled through a formal superstructure of planning activity that is itself ongoing. Hence, the activity of planning is distributed to all levels of the organization and is formally reconciled and coordinated by senior management. This type of philosophy seems closely associated with and supported by structures described in Earl's (1993) "organizational" approach to SISP.

Planning behavior within the learning school seems best described as an eclectic blend of systematic problem solving, strategic experimentation, formal reconciliation, and efficient knowledge transfer. Relying on

scientific methods for data collection and analysis, teams consisting of IS staff as well as members of other functional areas generate fact-based scenarios of current IT needs and the effectiveness of past planning efforts in meeting organizational needs. The informational products of this exercise are used to continuously refine priorities as well as improve the process for strategic planning. It is important to note that the planning process as well as the products of the process were continuously assessed and refined within the firms examined. Experimentation also seems to be a notable trait of planning within these firms. In particular, "signature" projects that represent clear breaks from the past and embody principles and approaches that the firm hopes to adopt in the future were used as a means of generating new approaches to strategic planning and implementation. These types of projects tend to provide a useful resource for transforming superficial knowledge about strategic events into deep understanding. For example, the construction of a new manufacturing facility enabled one firm to experiment with a totally new structure of SISP in terms of responsibilities, methodology, and coordination. These experiences were captured through formalized reconciliation exercises and compared with other planning experiences. Through this process of systematic assessment, experimentation, and reconciliation, the organization was able to build a knowledge base of best practice that was then used to refine and sharpen its strategic planning practice. Importantly, the effectiveness of the learning school is predicated on efficient transfer of knowledge. A core belief of planners within this school is that knowledge carries maximum impact when it is broadly shared rather than narrowly contained. Therefore, written (and more often intranet-based) documentation, formal presentations, and standardized training are typically utilized to instruct organizational participants in the creation and dissemination of strategic knowledge. These captured experiences in the form of written summaries, project reports, and even video clips provide the primary vehicles for communicating strategic knowledge.

Strategies within the learning school evolve as past decisions and external events coalesce to form a shared consensus for action. In contrast to the design, planning, and positioning schools which tend to emphasize a linear form of strategy formulation and implementation, the philosophy of the learning school emphasizes ongoing refinement of strategy through the initiation of strategic actions and resultant feedback. In the organizations studied, a deliberate process of acting, determining what works, reconciliation, and retaining desired actions was highly evident. Interestingly, this was a reversal of the central thrust noted in other organizations that assumed that strategies should be thoroughly rationalized and well reasoned before implementation. In the learning school, implementation activities are the foundation for recasting strategy or creating entirely new strategic direction; in other words, strategy formulation and implementation become a single integrated activity.

The planning process structure that supports the planning school is that of Profile 5. As noted earlier, this structure seems to contain aspects of both rationality and adaptability. While this structure may at first appear to be a paradox due to its hybrid nature, in practice, it uniquely supports strategic experimentation and the eventual evolution of a focused strategic orientation. High levels of comprehensiveness reflect the extensive efforts of learning school firms to acquire knowledge. This knowledge can take the form of skills, insights, or innovative relationships that aid the organization in better understanding the competitive and technological environment. High levels of formalization and a control focus reflect the need to structure problem solving and accurately reconcile realized performance with expected performance. In the three organizations studied, strategies tended to emerge from both top-level executives as well as a collective group of individuals throughout the hierarchy. In turn, emergent strategies tended to develop in many conventional as well as nonconventional ways as individuals or coalitions interact, mutually adjust, learn from each other, conflict, and eventually develop consensus. Therefore, process dimensions of top-down flow, broad participation, and high consistency seemed evident and necessary for supporting the institutional availability and reconciliation of strategic knowledge.

Similar to all Profile 5 firms, the studied organizations report extremely high levels of success across all dimensions of planning effectiveness. In particular, adoption of a learning philosophy tends to result in a

profile of planning activity that is extremely adaptive to changing organizational and environmental conditions. Constant evaluation of planning outcomes and planning process tends to produce high levels of alignment between business and corporate strategy as well as improvement in planning over time. Structured problem solving and experimentation through the use of cross-functional teams tend to produce high levels of understanding regarding organizational processes and also to create coalitions of support for new IS initiatives. However, a noted drawback of the philosophy is its tendency to promote strategic drift as many actors continually bounce back and forth between competing strategic perspectives. Without a measure of top-management control, planning teams can lose focus creating a series of organizational initiatives that are not guided by an overarching strategic perspective. In addition, a learning philosophy can be an inefficient manner in which to address major strategic initiatives. As scope and scale become large, traditional forms of strategic planning may be needed to better coordinate the efforts of various organizational constituents. For example, one of the learning school firms found that the strategic planning and implementation of a global network architecture required behavior closer to a planning school model due to the planning structures of other organizational partners and the sharing of financial resources. Because their partners did not have reciprocal planning skills, a more structured and predictable planning philosophy and approach was chosen. A final drawback of the learning school is the enormous amount of financial and time resources that must be committed to the planning effort. Performance assessment requires substantial amounts of managerial time, and experimental planning efforts fail almost as often as they succeed. Therefore, a key assumption of the learning school is that investment in strategic planning need not pay off immediately or in readily quantifiable financial metrics. The most important metric of success seems to be continuous improvement through a process of formalized benchmarking and managed experimentation.

Perhaps the best conceptualization of the learning school is as a hybrid system of the design, planning, and positioning schools. In contrast to a grand strategy or an approved set of budgets and programs, the strategies within this school tend to take the form of themes which are continuously refined at all levels of the organizational hierarchy until they mature as solidified and well-focused plans of action. Therefore, the primary role of planners seems to be that of a scientist. Through controlled experimentation and structured research, the planner continuously monitors and refines the strategic initiatives of the firm in an attempt to narrow the gap between expected and realized strategic planning performance. Importantly, not all of the learning comes from reflection or self-analysis; many of the interviewees within these firms noted that powerful insights could be gained from looking outside the immediate corporate context. Organizations in completely different lines of business were found to be fertile ground for novel approaches and catalysts for new ways of thinking. While each organization noted that this approach required the conscious creation of incentive systems that value "openness," they also noted that the knowledge gained from "false starts" and "bouncing around" between strategic thrusts was an invaluable resource in crafting new or refining existing strategic agendas. In addition, the assumptions and associated planning structures of the learning school seem particularly adept in seeking and providing synthesis to disparate pockets of organizational knowledge necessary for creating strategy. In stark contrast to other schools, the activity of strategic planning is viewed as a stochastic process of strategy through trial and error rather than a deterministic "hunt" for an optimal strategic plan.

The Political School. Profile 3 seems to be the underlying planning structure for a philosophy termed the political school. In essence, this profile seems to represent strategic planning devoid of formal structure, participation, or reconciliation. In the organizations studied, this phenomenon seemed to be particularly profound. As noted in Figure 3, the theme of the strategic planning process of these firms tends to be strategy making through bargaining and negotiation. The underlying belief of this school is that strategic planning is a process based on the use of power and political means to achieve a desired outcome. Past experiences in planning have convinced these managers

that even the best strategic plans can be quickly scuttled without the backing of powerful organizational coalitions. Therefore, the primary role of the planner is negotiator or broker between organizational interests. Because the process is primarily driven by parochial interest rather than common interest, the development of deliberate strategies consistent with the design, planning, and positioning schools is difficult. This is primarily due to the tendency among planners to dispute rather than share strategic perspectives. The convergence of actions into patterns that are characteristic of the learning school is also difficult because the bargaining process is haphazard, rewarding different strategic players at different times. However, consistent with firms identified by Earl (1993) as following an "administrative approach," strategic plans do emerge from the political school, usually in the aftermath of a power struggle.

Not surprisingly, the process structure of the political school reinforces the beliefs and behaviors of the key planning participants. High levels of comprehensiveness and formalization are not required because planning issues arise primarily through the informal opinions and impressions of key organizational players. Since political capital rather than financial capital is an important driver within this school, narrow participation, low focus on control and very little consistency are found in the process structure. While strategic planning activity occurs, it is usually outside any formal organizational structure or hierarchy. Therefore, while it is tempting to categorize the political school as a philosophy that views strategic planning to be of limited value, such a generality may be inaccurate. The school and its associated process structure seem to be a molded philosophy and designed planning structure that supports IS management as it gathers opinion and brokers acceptable courses of action. The primary documentation of this activity is the various conversations and known opinions held by key organizational coalitions. In effect, the primary source of knowledge, which is held very closely by the senior planner, could very well be categorized as "hearsay" rather than formally documented requirements.

Unlike other the planning profiles, yet consistent with the results of the cluster analysis, generally low levels of success are reported for all measures of planning effectiveness by the firms of the field study. Constant bargaining prohibits the clear alignment of the IS organization with larger strategic goals of the organization and the initiation of efforts to systematically analyze the business and its strategic needs. In turn, project development and management tend to be a series of reactions to power bases inside and outside the IS organization. This phenomena generates allies as well as pockets of resistance that can reduce cooperation with strategic initiatives and divide rather than unite organizational constituencies. However, in both organizations studied, it was noted that, on occasion, political maneuvering can be very effective in removing well-entrenched forms of resistance. In many instances, both senior IS managers of these firms had operated "outside the formal hierarchy" to secure funding and other sources of organizational support for IS initiatives which had been blocked by parochial interests of other managerial constituents. While such events brought short-term gain in the form of successful system implementations, it was also noted that, overall, a climate of politics-based strategic planning typically results in planning outcomes far below those desired, as the parochial interests of departments and individuals are placed above those of the company in developing and prioritizing strategic IS-based initiatives.

Although preliminary and certainly not fully generalizable, the results of the field study seem to strongly confirm the results of the empirical analysis. Firms that exhibited consistency across empirical measures of process characteristics also seem to exhibit this consistency when examined within the context of field study. In addition, firms that exhibited differences across the measured dimensions of planning process seemed equally diverse when examined through interviews, memorandum, and other documentation. The source of these process differences seems to be rooted in a broad philosophy of planning or a "planning school" that represents beliefs, experiences, and attitudes about the task of strategic planning. Also consistent with the empirical results, each of these schools varies in terms of measures of strategic planning effectiveness. At the two extremes of planning effectiveness are

the learning school and the political school. The learning school seems to be associated with high levels of success across all effectiveness dimensions while the political school seems associated with low levels of success across these measures. Other schools exhibit less robust levels of success consistent with the findings of the cluster analysis. Together, these results seem to strongly support varying philosophies, approaches, planning roles, and process structures of SISP that, in turn, exhibit varying levels of planning success. They also suggest that strategic planning is a designed and definable structure of organizational activity that is molded and perhaps capable of being transformed by prevailing planning philosophy. The potential implications of these findings are discussed in the following section.

Implications

Similar to many managerial activities, strategic planning must be understood and at least partially defined before any credible assessment of its effectiveness in terms of both outcomes and process can be established. If strategic planning is defined narrowly as a methodology or tool, then any assessment of SISP must be constrained within that particular domain. Therefore, if a particular method or tool fails or succeeds, then concluding that SISP has failed or succeeded may not be a justified assumption (of course the reverse may also be true—success in SISP may not be indicative of the success of a tool). As implied in these results, SISP is a complex set of organizational activity that reflects a philosophy rather than a narrow set of steps prescribed by a planning method. Specifically, the findings of this study suggest that SISP can be framed in a broad context of process dimensions that describe unique aspects of planning behavior and, when viewed as a collective, identify distinguishable profiles of strategic planning activity. Therefore, from the perspective of research in the area of SISP, these results imply that strategic planning is diverse among organizations and that this diversity can be measured and understood across dimensions of *comprehensiveness, formalization, focus, flow, participation* and *consistency.*

While early studies in SISP, particularly those of Earl (1993) and Pyburn (1983), have provided a rich context for capturing planning approach, they are inconsistent in terms of terminology and range of process characteristics considered. These studies also focus on a large scope of planning activity that does not differentiate between planning aspects that are contextual and those that are designed. The contribution of this study to these important works is a definitional and operational conceptualization of process dimensions that can structure dialogue in the area as well as provide validated measures for future research endeavors. Importantly, the developed dimensions incorporate aspects of planning systems developed in IS literature as well as aspects of strategic planning systems developed in strategic management literature. Hence, we suggest that the developed dimensions represent a consistent, yet richer and more theoretically rigorous foundation for conceptualizing the planning activity.

The results of this analysis also suggest that planning profiles are distinguishable across dimensions of effectiveness as well as across dimensions of process. Among the design dimensions developed in this study, theory suggests that systems of *rational adaptation* will be directly related to planning success. This structure implies that the planning system should exhibit rational planning tendencies of extensive alternative generation and solution search, formalized procedures and polices for planning, a focus on control, and top-down planning flow. It should also exhibit adaptive tendencies of wide participation profiles, and high levels of planning consistency. In sum, the planning system should be a structured process of opportunity search that "learns" through consistent feedback and wide participation. Across multiple dimensions of planning success, the efficacy of the rational-adaptive model seems strongly supported in this research. This finding tends to confirm recent theoretical and empirical work within strategic management that suggests successful strategic planning systems contain aspects of both synoptic formalism and logical incrementalism. It also confirms theoretical conceptualizations of SISP by Das et al. (1991), Sambamurthy et al. (1993), as well as Byrd et al. (1995), which develop optimal profiles of planning systems based on the rational adaptive model. In a more direct sense, this finding suggests that successful systems for SISP are structured, ongoing processes of planning and evaluation. Earl (1993)

notes this same phenomena; particularly among firms following his "organizational" approach. These firms reported high levels of planning system success through a process that was structured, yet driven by issues identified through wide participation and consistent reconciliation of planning emphasis and competitive context. From the perspective of practice, these findings provide a preliminary benchmark or guide for developing more effective systems of strategic planning. Specifically, the measures of process dimensions, the profile of the rational adaptive model, and other identified profiles can provide a useful framework for discussing organizational approach to SISP, developing programs of process redesign for SISP, and developing processes for ongoing assessment of planning approach and planning outcomes. The managerial challenge is to accurately assess the current state of SISP and then migrate the activity towards a profile that renders high levels of success across *all* levels of planning effectiveness.

Through field study, the findings of this analysis seem to suggest that prevailing planning profiles can at least be partially defined and explained by the experiences, beliefs, and attitudes of senior planners. Senior IS planners of firms within each profile reported very different impressions regarding the nature of SISP and their role as a planner. Collectively, these philosophies were labeled as "schools of thought" and seem to provide a context for understanding variations across planning process dimensions in both definition and reason. A direct implication of these phenomena is that prevailing process structures and associated approaches may be closely linked to deep-seated philosophies about the task and role of SISP. Therefore, along with process structure, beliefs, attitudes, and past experiences can provide a useful definitional context for understanding SISP. These "schools of thought" provide an additional element of dialogue for managers seeking to understand and reconfigure processes for planning. They also provide researchers with a more robust definitional context of SISP from which improved understanding of planning choice and migration between planning profiles can be gained.

As outlined in the last two rows of Figure 3, theory within SISP suggests that planning systems within each school of thought contain both strengths and weaknesses. Specifically, studies have suggested that comprehensive methodologies such as BSP, Information Engineering, and Strategic Data Planning are too rigid and many times too complex to be successfully implemented. Thus, while these methods provide an extensive structure for planning, they may not be conducive to refinement, making them extremely inflexible and apt to preserve existing strategies and structures. Interestingly, these methodologies have been recast by many firms to make them more adaptive. In these instances, the methodologies have been associated with higher levels of planning satisfaction. Similarly, many difficulties have been associated with the entrepreneurial planning system of the design school. In particular, an implementation gap may form when strategies formulated at higher organizational levels are "handed over" for implementation by lower-level managers. Additionally, high-level managers may be overwhelmed by the growing technological and structural complexity of the organization. Such problems have prompted many organizations to structure planning processes and seek input from diverse managerial groups. In sum, it seems that systems associated with planning and design schools may be evolving towards more effective systems associated with the learning school. Such a contention seems at least partially supported by the results of this study as well as the large number of cases captured in the rational-adaptive structure. Clearly, a challenge for future researchers is to understand how and why organizations migrate from one planning philosophy to another.

Importantly, the demonstrated effectiveness of the learning school and its associated process structure do not imply that it is easily implemented or problem free. As suggested by Earl (1993), planning as a structured process of learning builds in a level of flexibility and adaptability while maintaining coordination and control. However, too much flexibility can lead to a lack of focus on strategic objectives, promoting "strategic drift." In essence, the process of adaptation may preclude the adoption of a consistent strategic orientation as managers sway back and forth between issues of perceived importance. Thus, while the system is adaptive, it may not produce the clear strategic direction of comprehensive methodologies or "grand strategies." The implementation of adaptive systems of planning

also requires large amounts of resources in terms of managerial time and expense. Unless a culture of planning exists within the organization, securing these scarce organizational resources may be problematic.

In sum, this study provides a strong descriptive and prescriptive implication regarding prevailing schools of planning and their associated planning process structures. The study also provides a theoretical frame for future research that examines how and why planning behaviors and methodologies evolve and are transformed across schools and process dimensions of strategic IS planning. Together, these contributions should facilitate more accurate depictions of the role, structure, activity, and effectiveness of SISP in both the domain of research and the domain of practice.

Concluding Remarks

This study attempts to take a major step in conceptualizing the SISP process and examining its effectiveness. Based upon field work as well as theoretical literature within IS and strategic management, this study conceptualizes the process of SISP as a planning system consisting of *comprehensiveness, formalization, focus, flow, participation,* and *consistency.* In doing so, the objective was to move beyond "content" and "technique" issues typically used to represent SISP, and to generate a broader understanding of planning process profiles. SISP effectiveness was conceptualized on the dimensions of *alignment, analysis, cooperation,* and *improvement.* Various planning profiles were observed, based on both quantitative (cluster) analysis, as well as qualitative field study. The results suggest that the process for strategic IS planning may be thought of as a continuum ranging from one extreme of high comprehensiveness, high formalization, control focused, top-down flow, high participation, and high consistency to another extreme which exhibits opposite emphases. The results clearly support the importance of a multimodal planning process that emphasizes elements of both rationality and adaptability in achieving planning effectiveness. Such findings are very consistent with those of Earl (1993) as well as with prescriptions of successful strategy making in the emerging era of "hypercompetition" (Hart and Banbury 1994). Considered together, these lines of inquiry strongly suggest that effective planning approaches tend to emphasize emergent/learning/evolutionary process structures. Such structures may be in stark contrast to traditional planning within organizations. With the current competitive environment characterized by rapid change, the strong recognition of the strategic potential of IT, high opportunity, high expectations, rapid technological obsolescence, and global competitive pressure, the implications of these results are important for fostering robust knowledge gathering and effective forging of strategic intent.

Appendix A Sources of Data Inaccuracy and Coping Strategies

Source of Data Inaccuracy	Coping Strategy	Tactic Utilized in Present Study
• Lack of information or knowledge	• Identify person most knowledgeable about the issue of interest	• Field interviews • Literature Review
• Imperfect recall	• Seek factual data from informants with higher emotional involvement	• Top-IS executives and planners surveyed
• Respondent not motivated to answer or answer correctly	• Attempt to motivate the informants to cooperate with the researcher	• Monetary incentive • Anonymity • "Tailored" research summary
• Inappropriate data elicitation procedures	• Use questions that are pretested, structured and that impart an image of being rich in information content without being complex	• Pretested items • Pretested survey instrument

Appendix B Construct Operationalization and Validation

A general procedure for assessing the efficacy of measurement within the realm of confirmatory factor analysis is suggested by Jöreskog (1993), Gerbing and Anderson (1988), as well as Segars (1997). As noted in these works, a set of item scales represents an a priori measurement model of a theoretical construct space. To fully assess measurement properties of unidimensionality and discriminant validity, measurement models should be estimated in isolation, in pairs, and as a collective network (Jöreskog 1993, Anderson 1987). Within the present study, this approach is adopted.

Unidimensionality is a property of measurement that suggests a single construct underlies a set of scale items—the implication being that the computation of a composite score is meaningful only if each of the items is unidimensional (Segars 1997). Model fit measures, in particular χ^2, provide direct statistical evidence of unidimensionality and convergent validity (Gerbing and Anderson 1988). Further evidence of these measurement properties is gained through high and significant factor loadings as well as low residuals between the observed and implied covariance matrices. As implied by the statistics associated with each of the individual items as well as the composite models listed in Tables B1 and B2, each of the final scale items is a strong measure of its underlying construct and exhibits properties associated with unidimensionality.

Discriminant validity is achieved when the correlations between any two dimensions are significantly different from unity (Bagozzi et al. 1991). Empirically, this property can be established through the comparison of an unconstrained model that estimates (or "frees") the correlation (ϕ) between a pair of constructs and a constrained model that fixes the value of the construct correlation to unity. The difference in χ^2 between these models is also a χ^2 with degrees of freedom equal to one. A significant χ^2 difference implies that the unconstrained model is a better fit for the data thereby supporting the existence of discriminant validity (Bagozzi et al. 1991, Gerbing and Anderson 1988, Venkatraman 1989, Anderson 1987, Bagozzi and Phillips 1982). Within each of the two theoretical systems (planning system and planning success), these tests were conducted between all possible pairs of constructs. The results of this analysis strongly imply that each scale represents a unique component within its respective theoretical system.

Two underlying assumptions of confirmatory factor modeling are model determinacy (or identification) and multivariate normality. If a structural model is identified, the solution should converge regardless of starting values. Therefore, the estimation of multiple models with varying starting values provides evidence of model identification. This approach was undertaken in each of the measurement models of this analysis. In all cases, solutions converged at the same point and were virtually invariant, thereby providing strong evidence of model identification (Jöreskog and Sörbom 1989). Checks of statistics among the variables of the study revealed no serious departures from multivariate normality or excessive kurtosis.

Factor scores represent the degree to which each respondent scores high on a group of items that, in turn, load high on a factor. Therefore, a respondent that scores high on several items that have heavy loadings for a factor will most certainly obtain a high score on that factor (Hair et al. 1993). The formula for computing the factor score of a respondent for a particular construct is as follows:

$$\sum_{t=1}^{n} (\lambda i \, {}^{*}Si)$$

where
n = the number of items associated with the construct,
λi = the loading of item i on the construct,
Si = the observed score of item i.

Table B1 Strategic IS Planning Process Measures

Planning Comprehensiveness (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree")
We attempt to be exhaustive in gathering information relevant for IS planning ($\lambda = 0.64$).
Before a decision is made, each possible course of action is thoroughly evaluated ($\lambda = 0.89$).
We attempt to determine optimal courses of action from identified alternatives ($\lambda = 0.65$).
There is little trial-and-error in our strategic decision process ($\lambda = 0.43$).
We will delay decisions until we are sure that all alternatives have been evaluated ($\lambda = 0.60$).
Model Estimates: χ^2 (5) = 9.97 (p = 0.08); GOF = 0.97; AGOF = 0.92; Factor Reliability = 0.78.

Planning Formalization (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree")
Policies and procedures greatly influence the process of SISP within our firm ($\lambda = 0.42$).
We utilize formalized planning techniques (e.g. BSP) in our SISP process ($\lambda = 0.83$).
Our process for strategic planning is very structured ($\lambda = 0.87$).
Written guidelines exist to structure strategic IS planning in our organization ($\lambda = 0.68$).
The process and outputs of strategic IS planning are formally documented ($\lambda = 0.59$).
Model Estimates: χ^2 (5) = 9.22 (p = 0.10); GOF = 0.96; AGOF = 0.88; Factor Reliability = 0.82.

Planning Focus (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree").
The primary focus of IS planning is controlling cost through extensive budgeting ($\lambda = 0.51$).
In our IS planning process we encourage creativity and idea generation over control ($\lambda = 0.71$).
*Our IS planning process is tightly integrated with the firm's normal financial planning or capital budgeting routine ($\lambda = 0.16$).
Strategic IS planning is viewed as a means of controlling the growth of technology ($\lambda = 0.75$).
Control systems are used to monitor variances between planned actions and outcomes ($\lambda = 0.48$).

Model estimates: χ^2 (2) = 4.22 (p = 0.07); GOF = 0.92; AGOF = 0.80; Factor Reliability = 0.71.

Planning Flow (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree")
Strategic planning for IS is initiated at the highest levels of the organization (λ = 0.83).
The planning flow within our organization can be characterized as "top-down" (λ = 0.49)
Planning for IS is initiated by requests/proposals from operational/functional managers (λ = 0.52).
*Those who formulate strategic IS plans are most responsible for their implementation (λ = 0.17).
The primary role of upper management is to endorse rather than formulate IS plans (λ = 0.59).
Model Estimates: χ^2 (2) = 5.85 (p = 0.07); GOF = 0.98; AGOF = 0.89; Factor Reliability = 0.71.

Planning Participation (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree")
Top-management is actively involved in strategic IS planning (λ = 0.74).
A variety of functional area managers participate in the process of IS planning (λ = 0.87).
Our process for strategic IS planning includes numerous participants (λ = 0.85).
Strategic IS planning is a relatively isolated organizational activity (λ = 0.66).
The level of participation in SISP by diverse interests of the organization is high (λ = 0.75).
Model estimates: χ^2 (5) = 9.66 (p = 0.10); GOF = 0.96; AGOF = 0.88; Factor Reliability = 0.88.

Planning Consistency (Seven-point Likert scale anchored by "Strongly Disagree" and "Strongly Agree")
We constantly evaluate and review conformance to strategic plans (λ = 0.58).
We frequently adjust strategic plans to better adapt them to changing conditions (λ = 0.81).
Strategic IS planning is a continuous process (λ = 0.85).
*We formally plan for information systems as the need arises (λ = 0.14).
We frequently schedule face-to-face meetings to discuss strategic planning issues (λ = 0.83).
Model Estimates: χ^2 (2) = 4.73 (p = 0.07); GOF = 0.98; AGOF = 0.89; Factor Reliability = 0.86.

*This item was dropped and the four-item model was estimated.

Table B2 Strategic IS Planning Effectiveness Measures

Planning Alignment (Seven-point Likert scale anchored by "Entirely Unfulfilled" and "Entirely Fulfilled")
*Understanding the strategic priorities of top management (λ = 0.41)
*Aligning IS strategies with the strategic plan of the organization (λ = 0.31)
Adapting the goals/objectives of IS to changing goals/objectives of the organization (λ = 0.89)
Maintaining a mutual understanding with top management on the role of IS in supporting strategy (λ = 0.86)
Identifying IT-related opportunities to support the strategic direction of the firm (λ = 0.84)
Educating top management on the importance of IT (λ = 0.84)
Adapting technology to strategic change (λ = 0.83)
Assessing the strategic importance of emerging technologies (λ = 0.74)
Model Estimates: χ^2 (9) = 19.05 (p = 0.02); GOF = 0.97; AGOF = 0.93; Factor Reliability = 0.93

Planning Analysis (Seven-point Likert scale anchored by "Entirely Unfulfilled" and "Entirely Fulfilled")
Understanding the information needs of organizational subunits (λ = 0.73)
*Identifying opportunities for internal improvement in business processes through IT (λ = 0.52).
Improved understanding of how the organization actually operates (λ = 0.73)
Development of a "blueprint" which structures organizational processes (λ = 0.79)
**Monitoring of internal business needs and the capability of IS to meet those needs (λ = 0.61)
Maintaining an understanding of changing organizational processes and procedures (λ = 0.80)
Generating new ideas to reengineer business processes through It (λ = 0.80)
Understanding the dispersion of data, applications, and other technologies throughout the firm (λ = 0.71)
Model Estimates: χ^2 (9) = 16.37 (p = 0.06); GOF = 0.97; AGOF = 0.94; Factor Reliability = 0.89

Planning Cooperation (Seven-point Likert scale anchored by "Entirely Unfulfilled" and "Entirely Fulfilled")
Avoiding the overlapping development of major systems (λ = 0.68)
Achieving a general level of agreement regarding the risks/tradeoffs among system projects (λ = 0.78)
Establishing a uniform basis for prioritizing projects (λ = 0.76)
Maintaining open lines of communication with other departments (λ = 0.78)
Coordinating the development efforts of various organizational subunits (λ = 0.81)
Identifying and resolving potential sources of resistance to IS plans (λ = 0.77)
Developing clear guidelines of managerial responsibility for plan implementation (λ = 0.79)
Model Estimates: χ^2 (14) = 22.01 (p = 0.08); GOF = 0.97; AGOF = 0.95; Factor Reliability = 0.91

Planning Capabilities (Seven-point Likert scale anchored by "Much Deterioration" and "Much Improvement")
Ability to identify key problem areas (λ = 0.80)
Ability to identify new business opportunities (λ = 0.69)
Ability to align IS strategy with organizational strategy (λ = 0.79)
Ability to anticipate surprises and crises (λ = 0.67)

Ability to understand the business and its information needs ($\lambda = 0.81$)
Flexibility to adapt to unanticipated changes ($\lambda = 0.72$)
Ability to gain cooperation among user groups for IS plans ($\lambda = 0.71$)
Model Estimates: χ^2 (14) = 24.13 (p = 0.04); GOF = 0.97; AGOF = 0.94; Factor Reliability = 0.90

*Item deleted due to low reliability. **Item deleted due to significant cross loading with alignment.

Appendix C Field Study Protocol

Substantive interpretation for the statistical findings of the study were gathered through multiple visits with selected member firms of each emergent cluster (planning profile). The sites were chosen based on their willingness to participate further in the research effort and the availability of multiple respondents knowledgeable about the firm's approach to SISP. After the dispatch of the study's general findings to the entire participant sample, dialogue was initiated through phone conversations (usually 30 to 45 minutes) with executives of the selected organizations. These executives were asked to comment on the face validity of the characteristics empirically associated with their particular planning profile. They were also asked for a general overview of why such a planning profile was appropriate for their organization and what beliefs, attitudes, and experiences underlie the adoption of their planning profile. A request was then made for an on-site visit that would include interviews with multiple respondents with knowledge of, or experience with, the firm's approach to SISP. These initial responses were used to form a preliminary guide for describing the clusters and for structuring an interview protocol for on-site visits.

The first round of on-site visits focused on identifying meaningful context for the emergent profiles. To allow adequate latitude in identifying potential meaning behind the profile yet obtain comparable information, consistent open-ended questions were asked of all respondents. These questions were sent to the participating respondents of each firm approximately one week before the actual on-site visit. Examples of these questions are listed below.

Examples of Open-Ended Questions (Initial Round of On-site Interviews)

1. Describe, in general terms, your firm's approach to SISP.
2. What themes best describe key aspects of your SISP approach?
3. What key assumptions underlie your firm's approach to SISP?
4. Describe organizational expectations of SISP.
5. Examining your firm's profile with respect to each process dimension (comprehensiveness, formalization, focus, flow, participation, and consistency), describe:

(a) managerial beliefs, attitudes, and experiences underlying the firm's position along each dimension, and

(b) managerial beliefs, attitudes, and experiences underlying the firm's overall planning profile.

6. Describe the benefits realized through the activity of SISP.
7. What are the key advantages of your SISP profile?
8. What are the key disadvantages of your SISP profile?

Along with responses to these open-ended questions, corroborating sources of data such as memoranda, planning guidelines, process descriptions, and planning content were collected. Together, this data was reconciled by the author(s) around a framework of "planning schools of thought." Subsequently, a round of follow-up interviews was conducted with the senior IS executive and at least two other members of each organization to assess the validity of the planning school associated with each organization and to gather any additional content useful in describing the emergent planning profiles or their underlying "school of thought." This information was then reconciled into the illustrations and descriptions reported in the study.

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Accepted by Michael J. Earl, Associate Editor. This paper was received on June 20, 1997 and has been with the authors 9 months for 1 revision.