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STRATEGIC ORIENTATION AND TOP MANAGEMENT ATTENTION TO CONTROL SYSTEMS

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Management control systems are viewed typically as management-by-exception tools for implementing intended strategies. This study provides a different perspective by focusing on the way that top managers use specific control systems to focus organizational attention on strategic uncertainties and thereby guide the development of new strategic initiatives. Analysis of field-based data from 30 businesses in the U.S. health care products industry is used to develop a model and propositions that distinguish between interactive and diagnostic control systems, and illustrate the selective use of these systems in different strategic contexts.

INTRODUCTION

Management control systems are viewed typically as tools of strategy implementation. The research reported in this paper departs from this perspective by exploring the circumstances under which managers use control systems as catalysts for new strategic initiatives. An empirical study of 30 businesses in one U.S. industry is used to model and illustrate how top managers use formal systems *interactively* in different strategic settings to focus organizational attention and learning, and thereby shape the formation of new strategies.

In this study, management control systems are defined broadly as the *formalized routines and procedures that use information to maintain or alter patterns in organizational activity* (Simons, 1987a). These systems include formalized information-based processes for planning, budgeting, cost control, environmental scanning, competitor analysis, performance evaluation, resource allocation, and employee rewards.

Management control systems are usually described as information feedback systems (Green and Welsh, 1988; Giglioni and Bedeian, 1974). Goals are set in advance, outcomes are compared with preset objectives, and significant variances are reported to managers for remedial action and follow-up (Anthony, Dearden, and Bedford, 1989: Chapter 1). In this description of the management control process, strategy is a constraint: strategies are approved (if not developed) by top managers, plans are communicated downward through the organization, and formal systems are used to inform top managers if actions or outcomes are not in accordance with intended plans. Since control systems are a primary tool for management-by-exception, systems of this type may be labeled *diagnostic control systems*.

Recent research has indicated, however, that control systems are not always used to manage by exception. In certain circumstances, top managers use control systems far more actively on a day-to-day basis to intervene in organizational decision-making. Based on the amount of top management attention directed to a control system, a management control system can be labeled as *interactive* when top managers use that system to *personally and regularly involve themselves in the decisions of subordinates*.

When systems are used interactively, four conditions are typically present (Simons, 1987b: 351–352):

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1. information generated by the management control system is an important and recurring agenda addressed by the *highest levels of management*;
2. the processs demands *frequent and regular attention* from *operating managers* at all levels of the organization;
3. data are interpreted and discussed in face-to-face *meetings of superiors, subordinates, and peers*; and
4. the process relies on the *continual challenge and debate* of underlying data, assumptions, and action plans.

Through intensive and focused top-management attention on a specific control system, signals are provided to the entire organization to guide information gathering and the search for understanding. As participants throughout the organization respond to the interactive management control process to set agendas to challenge and assess new information and action plans, new strategic initiatives are likely to emerge. Thus, by using a control system interactively, top managers can guide organizational learning and thereby unobtrusively influence the process of strategy-making throughout the firm (Figure 1).

In a pilot study that preceded the current research, a model was developed to illustrate that the choice of systems to be used interactively depends on an assessment of *strategic uncertainties* by top managers (Simons, 1990). Strategic uncertainties do not relate typically to what the firm already knows how to do well, i.e. its critical success factors (Daniel, 1966); rather, strategic uncertainties refer to contingencies that could provide threats or opportunities as circumstances change (Daft *et al.*, 1988). Top managers focus their attention on strategic uncertainties that could derail their vision for the future and use selected systems interactively to focus the attention of the entire organiztion on these uncertainties.

Most of today's medium and large businesses have similar control systems: planning systems, budgeting systems, project management systems, human resource systems, and cost accounting systems are commonplace. Recent research suggests that top managers choose from this array to make a very limited number of control systems interactive and use the remaining control systems diagnostically (and thereby limit top-level involvement to periodic or exception-based reviews) (Simons, 1990). Moreover, top managers in different strategic settings appear to make different choices as to which systems to use interactively and which to use diagnostically.

The question pursued in this study, therefore, is whether systematic forces cause top managers to focus their attention on certain control systems in specific strategic settings.

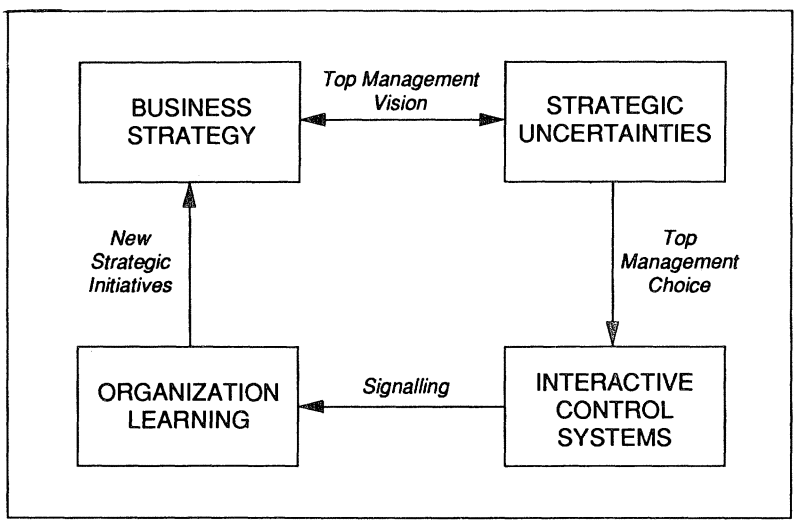

Figure 1. Process model of relationship between business strategy and management control systems

THE CURRENT STUDY

Objectives and sample selection

The concept of top managers choosing to use a limited subset of systems interactively and using the remaining systems diagnostically was developed during an intensive field study at Johnson & Johnson, a large company in the health care products industry (Simons, 1987b). With the objective of obtaining a comprehensive industry sample to identify how top managers in competing firms use management control systems, Johnson & Johnson's top managers provided a list of nineteen companies considered to be significant competitors.

The nineteen companies are all large, publicly held, and profitable; all compete in the health care products industry with varying degrees of focus on consumer products (e.g. personal health care and beauty products), professional products (e.g. equipment for health care professionals and hospitals), and over-the-counter and prescription drugs. While these firms are direct competitors, each has chosen to compete in different ways: some by low price, some by product innovation, some by brand marketing, and some by seeking protected niches. Since these firms are followed closely by investment analysts and the business press, it was possible to obtain independent analyses of company history, strategy, and performance spanning many years.

Based on the model presented in Figure 1, the research was designed to gather data from each of these firms to assess (1) each firm's current strategy, (2) top management's sense of future direction for the business and related strategic uncertainties, (3) how their control systems were configured, and (4) the extent to which any control system received a disproportionate amount of top management attention. Of the nineteen firms contacted, sixteen agreed to participate in the research (Table 1).

Table 1. Participating companies

American Home Products Corporation
Baxter Travenol Laboratories, Inc.
Becton-Dickinson and Company
Bristol-Myers Company
Chesebrough-Pond's Company
Colgate-Palmolive Company
Johnson & Johnson
Kimberly-Clark Corporation
Eli Lilly and Company
Marion Laboratories, Inc.
Merck & Co., Inc.
Pfizer Inc.
SmithKline Beckman Corporation
Squibb Corporation
Tambrands Inc.
The Upjohn Company
Warner-Lambert Company

Data gathering and analysis procedures

The unit of analysis for the study is the business unit where the responsibility for strategy rests. In highly focused companies the entire firm is one business and the responsibility for strategy rests with the topmost level of management. In more diversified companies, several business units are included in the sample since responsibility for business strategy was located in individual business units. Thus, the sixteen companies yielded data on thirty business units (hereafter referred to as businesses).

Interviews were scheduled with top, policy-making managers (e.g. president and top business unit managers) in the companies that agreed to participate. On average, five interviews with top managers and their direct subordinates were conducted in each company. Other data used in the analysis included investment analyst reports, business press articles, annual reports, internal company documents supplied by interviewees, and, in some cases, personal observation while attending company meetings.

Interviews, which averaged two hours in length, were based on an interview schedule intended to gather information on company history, background of the interviewee, current strategy of the business, business strengths and weaknesses, direction for the future, major uncertainties relating to continuing success, and the interviewee's use of management control systems. During discussions of management control systems, particular emphasis was placed on the individual's perception of the importance of specific management control systems to himself, his superior, and subordinates, including: allocation of time to various systems; frequency and intensity of data review; participation of superiors, subordinates, and peers in discussing information provided by the system; and the role of staff specialists.

A system was *classified as interactive* if a top manager reported that his personal, regular, and frequent use of a system was a top priority both for himself and for his subordinates, and that this system was used to set agendas for regular interlocking meetings with direct subordinates and others to review data and resulting action plans. A system was *classified as diagnostic* if a top manager reported little personal involvement with it, delegated the operation of the system to staff groups or lower-level managers, and relied on others to inform him when his attention to the system was required. During follow-up interviews, subordinates independently confirmed the importance that superiors attached to certain systems. Similarly, they also confirmed when their superiors paid minimal attention to most other systems.

Although this research design treats systems as either interactive or diagnostic, these labels represent two extremes of a continuum of top management attention. Nevertheless, ascertaining which systems were interactive in each firm was relatively straightforward. Top managers described the high priority and personal attention that they attached to specific systems. In many cases, agendas were produced to illustrate the frequency with which meetings were scheduled throughout the organization to discuss the information provided by these systems. Illustrative reports were close at hand and were brought out often during discussions. When prompted, these managers responded that they personally involved themselves very little in the non-interactive, diagnostic systems.

Recognizing that the same system may be classified as interactive in one business and diagnostic in other businesses is important in understanding the results of this study. Profit planning, for example, was highly interactive at Johnson & Johnson and several other businesses in the sample: the revision and re-estimation of profit plans by operating managers throughout the year was intense and continuous.[1] In most other businesses in the sample, however, profit planning was clearly diagnostic. After the annual budget was approved by top management it was not revised during the ensuing year, and was used instead as a performance target to be monitored by staff groups and reported to top management on an exception, diagnostic basis.

The data collection and analysis proceeded in several stages. After field work was completed in eighteen of the thirty businesses the data were summarized into nine categories developed by adding two additional categories (strategic uncertainties and success) to the well-known 'seven S' framework (Waterman, Peters, and Phillips, 1980). Thus, detailed written descriptions were prepared for each business for the following categories: systems, strategy, structure, skills, style, staff, shared values, strategic uncertainties, and success. Next, businesses that used similar interactive management control systems (the 'systems' variable) were grouped together and the attributes of each group were studied to identify commonalities among the remaining eight variables. This analysis led to preliminary configurations that were then tested and refined during data collection and analysis of the remaining twelve businesses in the study.

Finally, after the field work was complete, the total data set for all thirty businesses was reanalyzed using the '9-S' framework. A draft research report was prepared and sent to managers in each of the thirty businesses for comment. Responses were received from top managers in seventeen of the businesses and evaluated to ensure that the reported theory and configurations were in line with their experiences.

RESULTS

What types of systems are used interactively?

Data analysis reveals that top managers of thirty businesses in the health care products industry choose among five different types of control systems to use interactively. The five systems are:

1. *Program management systems*. This type of management control system monitors discrete blocks of organizational activity, typically on a project basis. New programs or projects focus on ways of improving product attributes, on ways of improving workflow processes, and on various types of basic and applied research programs. Critical path analyses, Gantt charts, and other types of milestone planning and analysis are typical in these systems.

[1] Johnson & Johnson's interactive profit planning systems are described in detail in Simons (1987b) and (1987c).

2. *Profit planning systems*. These management control systems focus on individual business units and encompass annual profit plans or budgets, second-year forecasts, strategic operating and financial plans, and long-range plans. Stated in financial terms, and supported by analysis and action plans, these systems report planned and actual revenues and expenses for each major business by revenue and cost-category.
3. *Brand revenue budgets*. These systems report in detail on a subset of the information contained in profit plans described above. Brand revenue budgets focus exclusively on revenue by brand. Brand revenue data are decomposed into unit volume and price by market segment, type of packaging, and promotion campaign. Market share data and shipment data by brand are also typically included in these systems.
4. *Intelligence systems*. These management control systems gather information about the social, political, and technical environments of the business. Industry data are purchased; legislative groups based in key policy-making capitals file weekly intelligence and lobbying reports; top managers solicit briefs and position papers in advance of industry meetings. This information—as well as information from political speeches, scientific and trade journals, and annual reports of competitors—is compiled in data bases, disseminated, and monitored regularly throughout the organization.
5. *Human development systems*. These management control systems include long-range strategic manpower systems, management-by-objectives systems, career planning and counselling systems, and succession planning systems. These systems establish an inventory of skills and management potential, and monitor the development plans of selected employees.

When do top managers use specific control systems interactively?

The detailed results of the study are described below by reference to three propositions. Figure 2 presents an overview of the analysis.

Proposition 1. Top managers with a clear sense of strategic vision choose one management control system to use interactively.

Top managers in seventeen businesses in the sample used only *one* of the five different types of management control systems interactively; all other management control systems in each business were used diagnostically. Top managers of these businesses were able to articulate a clear sense of how they believed their businesses would compete and evolve in the future; in each case the top manager's choice of which system to use interactively related to strategic uncertainties that he attached to the business's future, i.e. to perceived competitive attributes of envisioned product markets. The strategic orientation of the firms that used each type of interactive system are described below.

Interactive program management systems (three businesses or 10 percent of total sample)

The three businesses in this cluster were currently, or aspired to be, low-cost producers in their industry. Two of these businesses competed in high-volume, low-price, disposable products categories—what managers referred to as 'tonnage' businesses. The third business was a consumer business with considerable marketing skill and a long-standing orientation to low-cost production. Over the years, however, the low-cost position had been achieved by failing to respond to product quality innovations of competitors. The current top manager was determined to maintain the business's low-cost position while, at the same time, improving the performance features of its well-known consumer products.

New programs and related information systems were developed in these businesses to analyze the cost and features of competitor products, to assess product performance and customer needs, and to investigate the potential impact of emerging technologies on existing product lines and production processes. Top managers made program management systems interactive by their continual personal involvement in helping to establish new programs and milestones, weekly or bi-monthly reviews of progress and action plans, and regular follow-up of new information.

The strategic uncertainties perceived by top managers in these businesses related to the ability to deliver product feature advantages to customers. A continuing concern for these managers was ensuring that their organizations maintained the capabilities to preempt a technological end-run by competitors. They worried

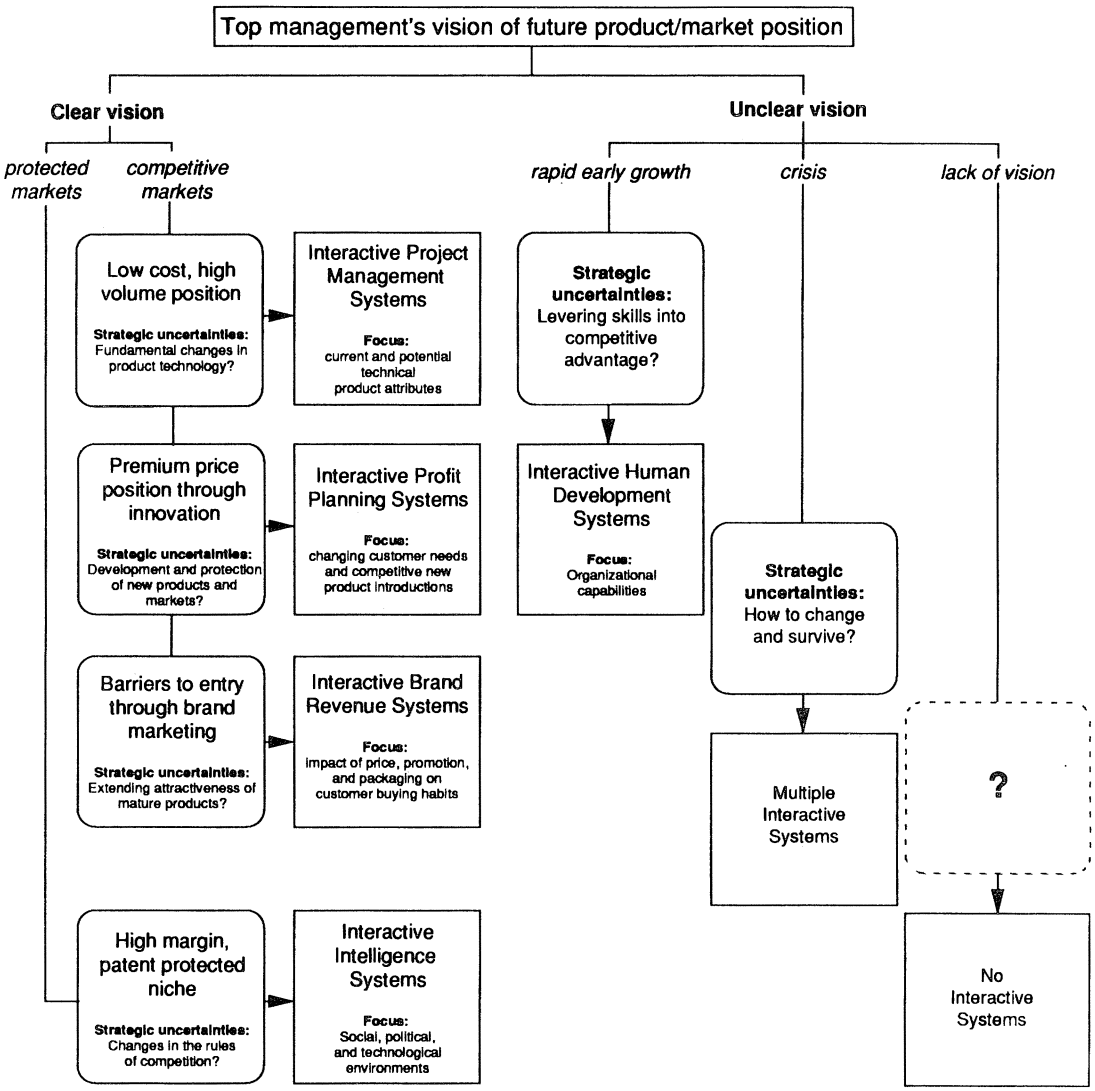

Figure 2. A framework for choosing interactive management control systems in the U.S. health care products industry

about missing changes in customer needs caused by fundamental technological innovations that could undermine their current or future ability to deliver cost-effective products to customers.

These managers used program management systems interactively to challenge the organization to develop new products and process improvements that would enable their businesses to achieve or maintain low-cost advantages. As one top manager explained,

> One of my key jobs is to identify which should be the key programs—to emphasize these and de-emphasize everything else. I really work those programs and everyone understands that. People get frustrated with me because I am the world's worst planner, but they don't realize that the real plans are laid into those programs.

Each of these three businesses was functionally organized, yet programs bridged functional boundaries to involve people in all parts of the organization. The time horizon for programs tended to be fairly long, i.e. a year or more since changes in one product often affected other integrated product lines. The competitive environment of these businesses was relatively stable, with a limited number of large competitors and

product technologies that were relatively easy to understand.

Interactive profit planning systems (five businesses or 16.7 percent of total sample)

The common denominator for these five businesses was the desire to compete through product and market innovations. Four of the businesses already had reputations for product innovation: two supplied health care products to professional users; two competed primarily in consumer markets. All four had strong capabilities in marketing and in product development. At the fifth business, a consumer business that was not perceived in the industry as innovative, top managers were making a concerted effort to reorient the business to emphasize new product development.

The competitive environment for these businesses changes rapidly and is often difficult to comprehend because of complex product technologies and a diversity of competitors attempting to erode market leadership positions. Time horizons for new product and market introductions are relatively short (6–12 months) as new products and marketing programs are rolled out to preempt or to react to the offensive moves of competitors. Because of rapidly changing markets the relevant horizon for long-range plans is typically quite short (e.g. 3 years).

The strategic uncertainty for top managers that use interactive profit planning is: how can we develop proactive tactics to establish and maintain positions of market leadership through high-price/high-value products? For these managers a primary concern is to stimulate the organization to be an innovation leader and thereby forestall the advance of diverse and hostile competitors. Ongoing product development is essential since barriers to entry are often low and start-up businesses, with new technologies and low overheads, are often able to compete effectively.

Managers of these businesses spend a great deal of time debating and adjusting profit plans during the year. Top managers are continually revising and discussing profit commitments with subordinates. Although financial planning and budget data are used to frame the discussion, the debate centers on the effects of competitor actions, the timing and success of new product roll-outs and withdrawals, changing customer needs, and consideration of appropriate responses to new market opportunities and threats. Driven by the recurring profit planning cycle with its bottom-up revisions of revenue and expense estimates, managers throughout the organization use profit plans as a regular forum to develop and present new action plans and strategies.

Businesses that use interactive profit planning are decentralized to allow close working relationships with their rapidly changing markets. The interactive profit planning systems, therefore, often play an important integrating role in these decentralized organizations. The role of the corporate controller's office in profit planning is limited, and operating managers assume personal responsibility for using and overseeing the profit planning system data.

Interactive brand revenue budgeting (six businesses or 20 percent of total sample)

> Every week, month, and quarter, I review each brand's sales in units and dollars. I look for downward trends and, equally important, for signs of unusual vitality. If a brand starts doing something, I get interested. What have we done that's new? Have we changed the packaging to say something new to the consumer?

Interactive brand revenue budgets focus organizational attention on unit volume and price for each brand category. Top managers in these businesses are intensely interested in following information related to volume in units and dollars, and total sales. Any trends or unanticipated changes animate a search for understanding.

The businesses that employed interactive brand revenue budgeting compete by selling mature products and brands. These managers are expert at exploiting strong brand franchises and extending product life cycles for seemingly indefinite periods. Four of the six businesses are consumer-oriented. Their strategy is to maintain brand loyalty at all costs: the main levers are price, promotion, and packaging. These businesses do very little product innovation, although they can be highly effective in marketing extensions of existing product lines.

The other two businesses in this group are successful research-based, ethical pharmaceutical businesses in difficult positions. The problem

facing top managers in these businesses was that no major new products would reach market until the next decade.[2] Accordingly, the strategy of top managers was to focus on aggressive marketing of existing brands to hold up earnings until new products arrive in the 1990s.

For top managers who have chosen to use brand revenue budgets interactively, strategic uncertainties focus on new ways of exploiting brand franchises and extending the life cycle of mature products. Because of high barriers to entry created by strong brand franchises, these businesses tend to face only a few major competitors. Competitor actions, however, cause relative market share positions to change rapidly.

Information provided by the brand revenue budgets frames the discussion agendas for top managers, brand managers, and other subordinates who interact regularly throughout the organization. Market share and shipment data are critical real-time indicators of tactical threats and opportunities. Decision horizons are extremely short—typically 1 or 2 months. These businesses can mount advertising and promotion campaigns, modify product packaging, and change pricing strategies quickly to defend their market share against competitor attacks. Because product/market decisions are reactive and rapid, top managers reported little interest in planning more than 2 years into the future.

The businesses in this category are organized on a brand structure basis with each brand having its own marketing capabilities and sharing manufacturing and administrative functions. These businesses have very strong, powerful, and centralized finance and control functions. These staff functions ensure tight expenditure control to maximize cash flows and allow reinvestment in promotion and advertising. This tight, diagnostic control by staff groups compensates for top management's singular, interactive focus on brand revenues and relative inattention to elements of cost.

[2] The position of these businesses is not unusual in a market segment where competitors can go a decade or more without a new product 'hit'. One pharmaceutical business reported being in a similar situation in the 1970s and employing similar strategies and management control procedures until new products came to market.

Discussion

How do top managers in competitive markets decide which of their various control systems to use interactively? How, for example, do managers choose among program management systems, profit planning systems, and brand revenue systems?

From analysis of the fourteen businesses described above, three interrelated factors appear to influence the design and choice of interactive control systems in competitive markets: technological dependence within product markets, complexity of the value chain, and the ability of competitors to respond to product market initiatives. These factors affect the focus of the interactive system, the types of measures used interactively, and the time horizon for decision-making (Table 2).

Systems Focus. Some markets are highly dependent on a given set of technologies. Businesses competing in these markets are forced to follow technological developments in the field carefully (e.g., hospital equipment). The more dependent a business or industry segment is on a given technological base, the more imperative it becomes for managers to protect competitive advantage (or disrupt the advantage of competitors) by focusing attention on potential new ways of applying technology (e.g., Interactive Program Management Systems). On the other hand, where technological dependence is low or diversified across products, customers tend not to be locked to any one product concept; top managers can focus attention instead on finding unique ways of responding to customer needs through new products or new ways of marketing existing products (e.g., through Interactive Brand Revenue Systems or Interactive Profit Planning Systems).

Measurement. Managers of businesses with complex value chains (e.g., those with ongoing product innovation in multiple markets) must monitor many trade-offs across product lines and markets: inputs, production, distribution, and sales and marketing tend to be linked in complex and dynamic ways. For these businesses, control systems that use accounting-based measures (e.g., Interactive Profit Planning Systems) provide essential indicators of threats and opportunities since these systems highlight the effects on the

Table 2. Factors affecting design of interactive management control systems in competing firms in the U.S. health care products industry

Interactive System Design Variable	Determinant		
		High	Low
System Focus	Technological dependence of business	Focus on emerging new technologies	Focus on changing customer needs
	Regulation and market protection	Focus on sociopolitical threats and opportunities	Focus on competitive threats and opportunities
Measurement	Value chain complexity	Use of accounting-based measures	Use of input/output unit-based measures
Time Horizon	Ease of tactical response by competitors	Short planning horizon	Long planning horizon

overall business of changing combinations of variables. By contrast, managers of businesses with stable, well-understood value chains (e.g., mature consumer brands) have far fewer complex trade-offs to manage. They can, therefore, reduce the level of complexity by focusing organizational attention on simpler input and output measures such as brand volume and share (e.g., Brand Revenue Budget Systems).

Time horizon. The final factor that appears to influence how systems are used interactively in competitive markets is the ability of competitors to respond quickly to a firm's product market initiatives. If copying a competitor's tactics is easy, the planning horizon will be extremely short. Tactical responsiveness, rather than planning, becomes the key to winning (e.g. interactive brand revenue budgeting systems). If emulating the strategic initiatives of competitors is difficult due to technological or market constraints, planning horizons can be longer (e.g. interactive program management systems; interactive profit planning systems).

The above discussion focused on businesses operating in competitive markets. A different set of factors appears to influence the choice of interactive systems in businesses that are positioned in protected markets. These are considered next.

Interactive intelligence systems (3 businesses or 10 percent of total sample)

The firms in this group comprise highly focused, research-based pharmaceutical businesses. These businesses engage in a niche strategy by identifying potentially profitable therapeutic drug classes and focusing research and development resources exclusively in these areas. Since public and governmental goodwill is essential for these businesses to maintain credibility in the regulatory and political process and with customers, top managers in these businesses spend more than half their time monitoring and discussing social and environmental issues.

Managers worry less about competitors and more about government legislation, regulators, changes in health-care technology, and shifts in social sentiment. The strategic uncertainties for these top managers relate to changes in the 'rules of the game'. These businesses typically enjoy high margins derived from patent-protected products, and have a great deal to lose if the rules of competition change. Long lead times make significant changes in strategy and product development emphasis difficult and costly.

Interactive intelligence systems gather and disseminate data to help managers understand and, when possible, influence the complex social, political, and technical environments of their businesses. Industry data are purchased, analyzed, and discussed; legislative groups based in Washington and other key policy-making capitals file weekly intelligence and lobbying reports; computerized data bases are used to compile information from political speeches, scientific journals, trade journals, and annual reports of competitors; and top managers seek leadership positions in industry associations and require employees to prepare briefs, tactics, and positions papers in advance of industry meetings.

The formal systems that support these activities are used actively by top managers to motivate participants throughout the organization to scan the environment for emerging trends, to identify and assess new technologies, and to gather intelligence to attempt to influence political discourse.

The time horizon for product market decisions in these businesses is extremely long—typically 5–10 years—as potential new products go through exhaustive clinical tests and regulatory examination. Environments, while complex and difficult to understand because of sophisticated technologies, are relatively stable with new competitors in each market niche. Therefore, these businesses are able to do sophisticated, diagnostic, long-range planning based on the timing of regulatory milestones for new products.

Since control of research is fundamental to the long-term success of these high-margin businesses, the research and finance staff groups in these businesses are large and powerful. The strong and heavily-funded research units, which assume primary responsibility for allocating basic research funds, are centralized and report directly to top managers. Accountants and auditors in the finance group are given responsibility to monitor the diagnostic program management and budgeting systems to ensure that subunits are operating within predetermined resource allocation limits.

Discussion

The seventeen firms described above all used one control system interactively. Managers of these businesses had a clear sense of how they believed their businesses would evolve in the future: some in competitive markets and some in protected markets.

Top managers in two additional businesses (6.7 percent of total sample) also used one control system interactively. In these cases, however, visions for the future were emerging rather than clear. Top managers of these businesses were using their human resource systems to generate a dialog about how their businesses should evolve as they expanded rapidly into new and unknown markets. In one business, sales and head count had increased dramatically over the past several years and the trend was expected to continue. The other business had made a strategic decision to enter international markets. Based on a new worldwide strategy, this business was hiring foreign nationals around the world to manage these new, geographically based business units.

Long-range strategic manpower systems, management-by-objectives systems, career planning and counselling systems, and succession planning systems were a principal concern for these managers and absorbed a disproportionate amount of their time. Because these human development systems were used interactively to promote a dialog throughout the organization, participants were continually discussing what kind of people should be identified for greater responsibility. Indirectly, and perhaps more importantly, these discussions were really about how the organization should evolve in the future. The annual report of one of these businesses had as its theme 'The Management of Change.' The top manager of this business confided, 'we really don't know what the business will look like in fifteen years.' Top managers had a sense of urgency and were counting on new ideas, strategies, and visions to emerge from the introspective debate that was framed by the interactive human development systems. As one manager stated.

> Our success depends on the evolution of these businesses and getting the right people; therefore, management of human resources is a primary focus. I spend a lot of time trying to transfer our philosophy through evaluations and counselling interviews. My primary concern is to get more and more people under our culture. I have to be less concerned about product development and financial results. These things will take care of themselves if the organization is working well. The only thing that I bring is attention to process. At the moment, human resources are my most critical concern.

Proposition 2. Top managers use multiple control systems interactively only during short periods of crisis.

While top managers of the businesses described above used only one control system interactively, top managers in another six businesses (20 percent of total sample) were using *all* categories of control systems interactively. These were businesses in transition—undergoing revolutionary change as contrasted to the evolutionary changes discussed in the previous group.

Three of these businesses faced crises due to failed strategies and resultant losses. The strategic focus for top managers of these businesses was survival and the strategic uncertainty was: how do we change?

Top managers in each of these businesses focused their attention on formal management control processes to activate organization learning and new strategies. One business developed a highly interactive management control system called 'Back on track.' Meeting weekly, key managers and their subordinates throughout the organization developed ideas, goals, action plans, and evaluated results that focused on new products and processes, ways to boost revenue or cut costs, changes in the competitive environment, and the need to reduce head counts while at the same time hiring new types of expertise. The short-term result of this effort was a 20 percent staff reduction, a 25 percent overhead reduction, a 12 percent productivity gain, and a 6 percent increase in volume. A similar approach was taken by one of the other two businesses in crisis: in this case the interactive management control system was termed '(Company name) on the move.' The process and results of the exercise for this business were similar.

A new top manager was hired to run the third business in crisis. In an attempt to focus the organization on change, the new manager's approach was to make all management control systems interactive. Existing management control systems that had previously been used diagnostically were made interactive to create a sense of urgency in the organization. At the same time, these systems allowed the new top manager to learn the critical aspects of the business and to form impressions about the strengths and weaknesses of the people around him. A similar response was observed in firms four and five—two successful businesses where new top managers had recently taken over responsibility for the business.

In the final business within this category, top managers used multiple interactive management control systems to stimulate thinking throughout the organization about how to rationalize a major merger that had just been completed. Again, the issue was: how to change? Top managers in this business were using all their formal control systems interactively for the period necessary to figure out what to do. Because of the merger, performance benchmarks had been lost, shared values disintegrated, and choices had to be made as to which employees and systems to retain and which to let go. Suddenly, performance-objective systems, budgets, executive-development systems, planning, and program-management systems all became highly interactive. As one of the top managers described,

> We have had these systems for a long time. What is new is that we're really paying attention to them. Our managers are being asked to simultaneously change a lot and do it all well—consolidate operations; cut head count; improve quality; boost sales and earnings; develop new products. Right after the merger, we started taking management objectives very seriously.

For the six businesses in transition, the use of multiple interactive systems lasted for 8–12 months. Once crises began to subside, top managers removed themselves from active involvement in multiple interactive control processes. Instead, top managers began concentrating on putting their vision for the future in place, and chose one control system to use interactively and began to use other systems on a diagnostic, management-by-exception basis.

Discussion

Why do top managers not use all management control systems interactively? Organizations in transition—where all systems are interactive—report incredible stress as employees are pushed to their limits to respond to the short-term information and action demands of superiors. Top managers begin monitoring and asking questions about information that many subordinates do not fully understand. Managers throughout the organization are forced to divert attention from other tasks to respond to the new information requests. Attempting to focus intensively on all management control systems for extended periods risks information overload, superficial analysis, a lack of perspective, and potential paralysis. Not only is there a limit to the organization's energy and attention, intensive focus on all systems does not allow top managers to send clear signals throughout the organization as to what they consider to be the strategic uncertainties inherent in their vision for the future—the main purpose of using a system interactively.

Proposition 3. Top managers without a strategic vision (or an urgency to create a strategic vision) do not use control systems interactively.

In five businesses (16.7 percent of total sample), top managers did not use any control system interactively; all systems were used in a traditional diagnostic basis. Each had a different story. One business was small and the top manager was able to manage by interpersonal contacts with colleagues. A second business was a commodity producer that sold most of its output to a sister subsidiary; this business was effectively sheltered from the competitive marketplace. In the third business the top manager said that he did not have an overall strategy or sense of the future for his organization, stating that strategies must come from the bottom of the organization and it was not his job to manage too closely.

The top manager of the fourth business worried that the business did not have a clear sense of direction. He had recently announced a strategic-growth-initiative program that was intended to provide strategic focus through better strategic planning, a new system of monthly budget reviews for newly formed strategic business units, and more emphasis on management development and succession planning. Before these system changes could be put in place, however, the corporate parent of this business announced that the business would be sold.

The fifth business was experimenting with state-of-the-art management systems, but none of these systems were used interactively. Powerful staff groups were installing the latest strategic management systems including portfolio management techniques, PIMS data bases, and integrated strategic planning systems. The top manager, however, declined to involve himself in either these systems or related committees. Managers in the organization expressed frustration,

> In theory, the planning is pretty good; the problem is that the planners don't understand the mechanics of the operations. There are books and books to be filled out—it is just unbelievable. Many people in this business are confused as to who is the boss. Sometimes we send memos to the Strategic Review Committee or to the Operating Review Committee and I don't think they understand who is giving orders in this business. We are drifting—giving power to committees. Direction should come from the top.

Discussion

Why are management control systems not interactive in some businesses? Generalizing from these five cases is difficult, but when organizations are small or shielded from the need to develop market strategies, there is probably little benefit in making selected systems interactive. More generally, when top managers of large businesses do not have a vision for the future—or a sense of urgency about creating such a vision—they do not appear to make control systems interactive.

CONCLUSION

The relationship between strategy and management control systems has been depicted consistently in the research literature for many years: management control systems are used to implement the strategies developed by top managers. Questions about this relationship arise, however, when strategy is viewed as an incremental and emergent process (Mintzberg, 1978; Quinn, 1980). How do top managers direct subordinates to develop, champion, and implement sound strategies? (Bourgeois and Brodwin, 1984). How do top managers 'control' a grassroots, bottom-up strategy process? (Mintzberg and McHugh, 1985). How do top managers shape the strategic context in which autonomous strategic behavior can flourish? (Burgelman, 1983a,b).

While control systems may appear to be similar across settings (budget documents are remarkably similar in different companies), this study suggests that there are fundamental differences in the way that policy-making managers *use* control systems. It appears that top managers do not spend a lot of time monitoring the critical success factors associated with current strategies. Contrary to accepted theory, top managers of low-cost, high-volume businesses, for example, do not pay a great deal of attention to efficiency-related controls, such as cost accounting systems (e.g. Miles and Snow, 1978: 48). The parameters for these critical success factors are well understood throughout the organization, and can be monitored effectively by periodic attention to goal-setting and diagnostic, exception-based reporting. Instead, top managers focus on systems that produce and monitor information on the strategic

uncertainties that are associated with their visions of the future.

The choice of interactive systems by top managers sometimes appears counterintuitive. Why, for example, do top managers of businesses competing through product innovation choose to use profit planning interactively? Why do managers of low-cost firms focus on program management systems? In each case the chosen system gathers data on strategic uncertainties, is simple to understand, and cascades throughout the organization. The interactive control system is used to stimulate face-to-face dialog and build information bridges among hierarchical levels, functional departments, and profit centers. In the literature, budgeting is often associated with bureaucracy, research inflexibility, and stable product markets. This study suggests that profit planning, when used interactively, can be a proactive and dynamic tool to gather information and stimulate discussion in decentralized businesses about the effects of demographic market changes, competitor actions, and new product roll-outs. Similarly, program management systems can be effective dynamic tools to build information bridges in functionally organized, low-cost firms where top managers worry about the impact of technology changes on customer product needs.

The choice by top managers to use a control system interactively instead of diagnostically represents an element of strategic choice (Child, 1972) not previously recognized in the research literature. Since organization attention is limited (Simon, 1976: 294), top managers must decide what to emphasize and what to de-emphasize. By using selected control systems interactively and others diagnostically, top managers can signal where organizational attention and learning should be focused; this systematic focusing allows top managers to guide the emergence of action plans and new strategic initiatives. Thus, top managers are engaged in a second-order process—a process of choosing among organizational processes.

Traditional diagnostic systems, which top managers monitor on an exception basis, are oriented to implementing past and present strategies. These controls are designed to tell top managers when things are wrong, when actions are not in accordance with plans. But this is the easy part. The trick is sensing when conditions are right for seizing new opportunities and shifting direction—this is the purpose of using selective control systems interactively.

The results of this study suggest that top management vision is the esential ingredient for interactive management control systems. It is top managers, after all, who decide which formal processes to use interactively and which to use diagnostically, based on their sense of purpose for the organization and their personal assessment of associated strategic uncertainties. Although it is outside the scope of this paper, it was evident from the data gathered during this study that top management's assessment of strategic uncertainties may change as businesses mature, move into new markets, or react to changes in their environment. Crises may develop. A new top manager may bring a new vision to the organization. With each of these changes, systems that were previously interactive may be de-emphasized and used diagnostically, and other systems made newly interactive.

Top managers understand that formal process is often essential to foster dialog from which new ideas and action plans can emerge. Interactive control systems are used by top managers to guide the informal strategy-making process by forcing personal involvement, intimacy with the issues, and commitment (Mintzberg, 1987). Using selective control systems interactively is a way of organizing attention, as distinct from a way of organizing people: as such, it is a powerful tool in guiding and energizing the competitive evolution of the firm.

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REFERENCES

Anthony, Robert N., John Dearden and Norton M. Bedford. *Management Control Systems*, 6th edn, Irwin, Homewood, IL, 1989.

Bourgeois, L. J., III and David R. Brodwin. 'Strategic implementation: Five approaches to an elusive phenomenon', *Strategic Management Journal*, **5**,(3), 1984, pp. 241–264.

Burgelman, Robert A. 'A process model of internal corporate venturing in the diversified firm', *Administrative Science Quarterly*, June 1983a, pp. 223–244.

Burgelman, Robert A. 'Corporate entrepreneurship and strategic management: Insights from a process study', *Management Science*, December 1983b, pp. 1349–1364.

Child, John. 'Organizational structure, environment and performance: The role of strategic choice', *Sociology*, January 1972, pp. 1–22.

Daft, Richard L., Juhani Sormunen and Don Parks. 'Chief executive scanning, environmental characteristics, and company performance: An empirical study', *Strategic Management Journal*, **9**(2), 1988, pp. 123–139.

Daniel, D. Ronald. 'Reorganizing for results', *Harvard Business Review*, November–December 1966, pp. 96–104.

Giglioni, Giovanni B. and Arthur G. Bedeian. 'A conspectus of management control theory: 1900–1972', *Academy of Management Journal*, **17**(2), 1974, pp. 292–305.

Green, Stephen G. and M. Ann Welsh. 'Cybernetics and dependence: Reframing the control concept', *Academy of Management Review*, **13**(2), 1988, pp. 287–301.

Miles, Raymond E. and Charles C. Snow. *Organizational Strategy, Structure, and Process*, McGraw-Hill, New York. 1978.

Mintzberg, Henry. 'Patterns in strategy formation', *Management Science*, **24**(9), 1978, pp. 934–948.

Mintzberg, Henry. 'Crafting strategy', *Harvard Business Review*, July–August 1987, pp. 66–75.

Mintzberg, Henry and Alexandra McHugh. 'Strategy formation in an adhocracy', *Administrative Science Quarterly*, June 1985, pp. 160–197.

Quinn, James B. *Strategies for Change: Logical Incrementalism*, Irwin, Homewood, IL, 1980.

Simon, Herbert A. *Administrative Behavior*, 3rd edn, Free Press, New York, 1976.

Simons, Robert. 'Accounting control systems and business strategy: An empirical analysis', *Accounting, Organizations and Society*, **12**(4), 1987a, pp. 357–374.

Simons, Robert. 'Planning, control, and uncertainty: A process view', In W. J. Bruns and R. S. Kaplan (eds), *Accounting and Management: Field Study Perspectives*, Harvard Business School Press, Boston, MA, 1987b.

Simons, Robert. 'Codman & Shurtleff: Planning and control system', Harvard Business School Case Clearing #9-187-081 with teaching note #5-188-029, 1987c.

Simons, Robert. 'The role of management control systems in creating competitive advantage: New perspectives', *Accounting, Organizations and Society*, **15**(1/2), 1990, pp. 127–143.

Waterman, Robert H., Jr, Thomas J. Peters and Julien R. Phillips. 'Structure is not organization', *Business Horizons*, June 1980, pp. 14–26.