

USING DIAGNOSTIC AND INTERACTIVE CONTROL SYSTEMS

As businesses grow larger, communication from the managers of strategic goals and measures becomes both more important and more difficult, because people in the organizations need to understand the strategy and their role in achieving strategically important goals. We distinguish between two types of control systems (note that the difference is not in their technical design features but in the way managers use them), that are:

- Diagnostic control systems: used as levers to communicate critical performance variables and monitor the implementation of intended strategies (strategy communication)
- Interactive control systems: used to focus organizational attention on strategic uncertainties and provide a lever to fine-tune and alter strategy as competitive markets change (strategy implementation control)

Diagnostic control systems: goals, measures and incentives aligned

Definition: formal information systems that managers use to monitor organizational outcomes and correct deviations from preset standards of performance. Those systems must allow to set goals in advance, measure outputs, compute/calculate performance variances, use variance information as feedback to alter inputs or process to bring the performance back in lines with the goals/standards.

Some examples of the tools used as diagnostic control systems are: profit plans, balanced scorecards, expense center budgets, project monitoring systems, brand revenue/market share monitoring systems, human resource systems, standard cost-accounting systems.

Because in an organization there are many measures that could be reported to managers, but their attention and time is scarce, they must select specific measures to monitor. To decide which of them should be monitor, we must see the reasons why they are used:

- Implementing strategy: diagnostic control systems are the top-down monitoring tools for implementing strategy as plan because they link strategy with critical performance goals and targets. To achieve the implementing strategy goal through diagnostic control systems, managers should ensure that critical performance variables have been analyzed and identified, appropriate goals have been set, and feedback systems are adequate to track performance.
- Conserving attention: in this regard it is used a process called management by exception, which allows managers to put the organization on automatic pilot. Basically, they receive periodic exception reports from staff accountants and intervene only in case of significant deviations.

In order to effectively deploy these diagnostic control systems, business managers must know how to set key targets and make adjustments as circumstances warrant, which means devoting their attention to five areas:

- 1) Setting and negotiating goals: managers must personally ensure that goals (through which the strategy is effectively implemented and to which subordinate devote their energy) are appropriate both in terms of desired direction and level of achievement. They should set them infrequently (once a year) and monitor progress during the operating period by a quick scan of exception reports.
- 2) Aligning performance measures: diagnostic control measures define the span of accountability which is performance variables for which a manager is accountable, and for this reason managers should ensure (infrequently) that performance measures truly reflect strategic goals and priorities.
- 3) Designing incentives: bonuses, promotions and merit increases can be made contingent upon performance reported in diagnostic control systems; incentives provide extrinsic motivation so that managers do not have to monitor the day-to-day activities of subordinates.

- 4) Reviewing exception reports: with diagnostic control systems in place, managers can review monthly and quarterly exception reports as soon as they are released; if measurement systems and incentives are well-designed and aligned, this review can be conducted very quickly.
- 5) Following up significant exceptions: that can emerge in the exception reports; however, usually subordinates intervene before the managers receive the reports because they are monitoring the same measures.

There are also risks connected to putting the business on automatic pilot and powering up the system through performance measures and incentives:

- Measuring the wrong variables: we are referring to a misalignment between control systems and strategy, which sometimes causes the strategy to go off track.
- Building slack into targets: since performance is a function of achieving goals, employees want to increase the probability to meet the goals and so they tend to start with the easy goal and try to build slack into their performance targets.
- Gaming the system: it's a misdirected effort of employees who work hard to achieve the goals they are measured on. In practice, what happens is that their energy may focus on ways of enhancing the measure, even if increasing the measure does not lead to advancement of the underlying goal or strategy.
- Smoothing: when an individual alters the timing and/or recording of transactions to show better performance (example: a manager who has reached all the bonuses for that accounting period, and who stops working and defers that work to the next accounting period)
- Biasing: managers report only good news and hide or downplay bad news.
- Illegal acts: committed because of the performance pressures.

So, although managers are forced to rely on diagnostic control tools to motivate goals achievement, the same tools inevitably risk dysfunctional behavior from employees who might respond inappropriately to pressure or temptation to bend the rules. Which is why a good control system is needed in those cases.

Interactive control systems

The previous systems (aligning goals, measures and incentives) give managers the freedom to concentrate on growing the business, enhancing profitability, and positioning products and services in rapidly changing markets.

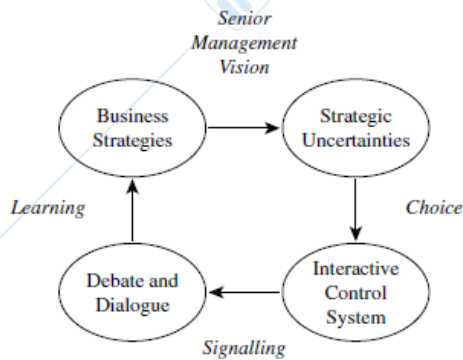
Strategic uncertainties are the emerging threats and opportunities that could invalidate the assumptions upon which the current business strategy is based. This uncertainty derives from a difference in the information that would be required to perform a task and that are actually possessed by the organization; they are unknowable in advance and emerge unexpectedly over time. Questions must be asked constantly about how to realign the strategy to take advantage of these emerging opportunities or deflect unexpected threats.

TABLE 1 Distinction Between Critical Performance Variables and Strategic Uncertainties

	CRITICAL PERFORMANCE VARIABLES	STRATEGIC UNCERTAINTIES
Recurring questions	What must we do well to achieve our intended strategy?	What changes in assumptions could alter the way we achieve our vision for the future?
Focus on	Implementing intended strategy	Testing and identifying new strategies
Driven by	Goal achievement	Top management unease and focus
Search for	Efficiency and effectiveness	Disruptive change

Interactive control systems are the formal information systems that managers use to personally involve themselves in the decision activities of subordinates. This way managers can focus everyone in the organization on these strategic uncertainties (they rely on the fact that everyone watches what the boss watches). These systems are defined by the way senior managers use them rather than by their technical design features.

FIGURE 3 Using the Interactive Control Process for Learning



Business strategy: how the business currently creates value for customers and differentiates its products and services from competitors.

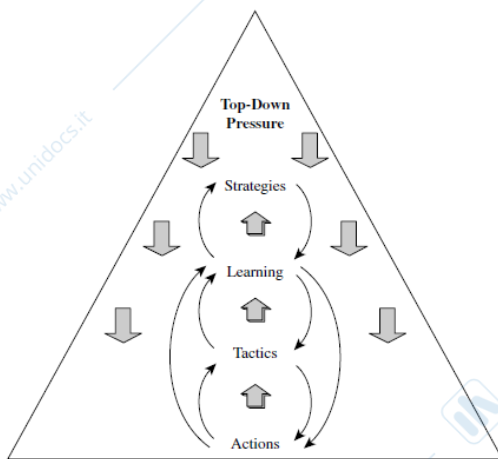
Strategic uncertainties: derive from senior management vision about the future of the business (ex: changes in customer preferences, competitor actions, new technology, government regulation).

Interactive control systems: to focus the attention on the uncertainties, managers make

a choice about which one performance measurement and control system to use in a highly interactive way.

Debate and dialogue: data from the system is used to challenge subordinates and their action plans and force them to attempt to make sense of rapidly changing conditions. This choice signals unequivocally what is important. The employees therefore work diligently to gather as much data as they can to be able to respond to questions and suggest action plans that respond to changing circumstances, anticipating the questions of the boss (interactive debate and dialogue). Emerging strategy can result from this last point. The discussions surrounding interactive control systems are always face-to-face, involving operating managers directly; meetings are used to brainstorm and use every possible piece of data to collectively make sense of changing circumstances.

FIGURE 4 Top-Down Pressure: Bottom-Up Strategy



Strategy as emerging pattern of actions: strategies can emerge spontaneously in organizations as employees experiment and replicate small successes in their attempts to create value. Interactive control systems provide the principal means by which managers can guide this process and are the guidance to searching for new opportunities, stimulate experimentation and rapid response, and maintain control over what could otherwise be a chaotic process.

Design features of interactive control systems: any control system (profit planning systems → strategic uncertainties relate to the development and protection of new products and markets; market share monitoring

systems → for example brand revenue budgets are used interactively in businesses where strategic uncertainties relate to extending the attractiveness of mature products; project monitoring systems; project management systems → in businesses where changes in product technology are strategic uncertainties; balanced scorecards; intelligence systems → used interactively when there is significant uncertainty concerning changes in regulation and government policy; human resource systems → are used interactively when strategic uncertainties relate to acquiring new skills to meet competitive needs) can be used interactively by senior managers if it meets certain requirements.

To decide whether or not a system can be used as an interactive control system, 4 criteria must be met:

- 1) The information contained in an interactive control system must be simple to understand: because everyone should be able to take part in the debate and dialogue phase and managers can't waste their time trying to understand the technicalities
- 2) Interactive control systems must provide information about strategic uncertainties: the uncertainties are related to the specific business and strategy, they are crucial following the idea that everyone watches what the boss watches
- 3) Interactive control systems must be used by managers at multiple levels of the organization: because they are used as a mean to stimulate subordinates to search for, analyze and discuss new information
- 4) Interactive control systems must generate new action plans: senior managers looking at an interactive control system should ask what has changed, why, and what to do about the changes (the system must be used to adjust the emerging strategy on a real time basis).

FIGURE 5 Interactive Control System Choices: A Function of Strategy and Strategic Uncertainties

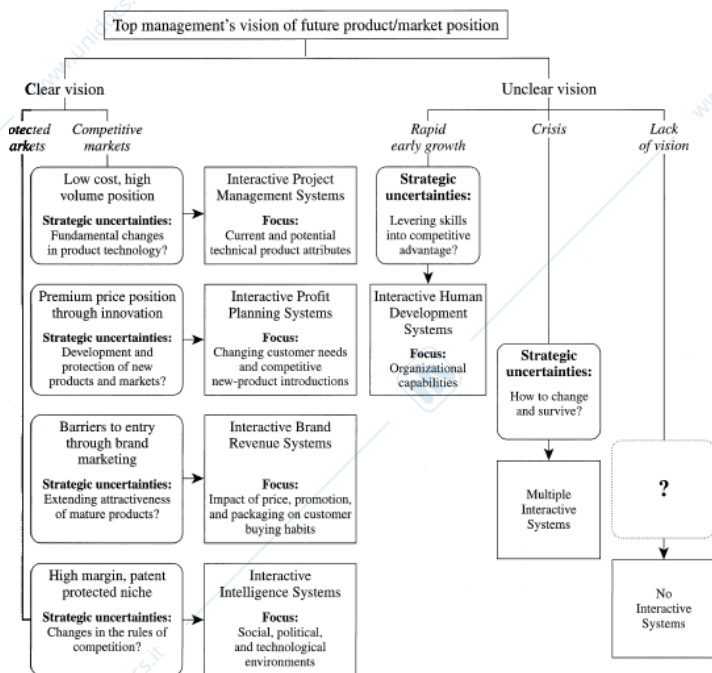


TABLE 2 Factors Affecting the Design and Choice of Interactive Control Systems

STRATEGIC UNCERTAINTY	IF UNCERTAINTY IS HIGH, THEN INTERACTIVE CONTROL SYSTEM	IF UNCERTAINTY IS LOW, THEN INTERACTIVE CONTROL SYSTEM
Technological Dependence	Focuses on emerging new technologies	Focuses on changing customer needs
Regulation and Market Protection	Focuses on sociopolitical threats and opportunities	Focuses on competitive threats and opportunities
Value Chain Complexity	Uses accounting-based measures	Uses input/output measures
Ease of Tactical Response	Uses short planning horizon	Uses long planning horizon

In choosing the proper interactive control system, organizations are influenced by four factors:

- Technological dependence: if high, we use interactive project management systems (to focus the organization on emerging technologies and their potential effects on the current strategy of the business), if low we choose interactive brand-revenue systems or interactive profit-planning systems that can model business trade-offs (to focus the organizational attention on finding ways of responding to changing customer needs through new products or marketing programs)

- Regulation: interactive intelligence systems are essential for gathering data to understand and influence the complex social, political, and technical environment of the businesses (ex: pharma)
- Complexity of value creation: when the complexity is high, accounting-based measures, such as interactive profit-planning systems, are used (because R&D, production, distribution, and marketing tend to be linked in complex and dynamic ways and this kind of systems highlight how changes in one variable affects the others); when the complexity is low, brand-revenue budget systems are used interactively.
- Ease of tactical response: it affects the need of a short or long horizon plan. When copying a tactic is easy, interactive brand revenue systems are used (to have rapid feedback about the effects of pricing, promotion, and packaging tactics); when it is hard, interactive project management systems or interactive profit-planning systems will be more effective

Of the many possible systems, the vast majority is used as diagnostic, usually one is chosen as interactive. The reasons of this choice are mainly three:

- 1) Economic: interactive systems require more senior managers' attention than diagnostic ones (where we have the rule of by exception)
- 2) Cognitive: choosing many interactive systems could lead to the risk of information overload
- 3) Strategic: since the systems are used as signaling and communication devices to monitor uncertainties, having multiple systems would disperse the attention

For this type of systems formula-based incentives would be a terrible idea because people would adopt gaming behaviors even more than with diagnostic systems. Incentives for interactive control systems must, therefore, be designed to reward an individual's innovative efforts and contribution based on subjective assessment of the superiors. Subjective rewards promote learning and information sharing but demand a huge investment of time; they yield three outcomes:

- incentives for employees to make their efforts visible to their superiors: employees will be motivated to communicate information about emerging problems and opportunities and to report how they have responded
- Rewarding contribution and effort, rather than results, reduces information biasing and encourage employees to share both good and bad news
- Rewarding contribution subjectively demands that superiors have the ability to calibrate the efforts of subordinates accurately, which means that superiors must spend their time really learning about the business and its changing dynamics

NB: how to use profit plan diagnostically and interactively at the same time? By adding contingency buffers to the profit plan to protect key diagnostic targets; they provide a cushion that allows managers to reforecast profits during the year as part of an interactive process.

Return on management

ROM= Amount of Productive Organizational Energy Released/ Amount of Management Time and Attention Invested

The target is to increase the numerator and decrease the denominator. To do so, managers should understand what he or she must do personally (interactive control systems: they are attention enhancer)

TABLE 3 Control System Tasks for Managers and Staff Groups Using Diagnostic and Interactive Control Systems

	MANAGERS	STAFF GROUPS
Diagnostic Control Systems	Periodically set or negotiate performance targets Receive and review exception reports Follow up significant exceptions	Design and maintain systems Interpret data Prepare exception reports Ensure integrity and reliability of data
Interactive Control Systems	Choose which system to use interactively Schedule frequent face-to-face meetings with subordinates to discuss data contained in system Demand that operating managers throughout the organization respond to information contained in the systems	Gather and compile data Facilitate interactive process

and what can be delegated to staff assistants (diagnostic control systems: act as attention-conserving devices for senior managers, although they cannot delegate target setting and follow-up).

APPENDIX 1 Building Block Summary for Diagnostic and Interactive Control Systems

DIAGNOSTIC CONTROL SYSTEMS

WHAT	feedback systems that monitor organizational outcomes and correct deviations from preset standards of performance <i>Examples:</i> profit plans and budgets goals and objectives systems balanced scorecards project monitoring systems brand-revenue monitoring systems strategic planning systems
WHY	to allow effective resource allocation to define goals to provide motivation to establish guidelines for corrective action to allow ex post evaluation to free scarce management attention
HOW	set standards measure outputs link incentives to goal achievement
WHEN	performance standards can be preset outputs can be measured feedback information can be used to influence or correct deviations from standard process or output is a critical performance variable
WHO	senior managers set or negotiate goals, receive and review exception reports, follow up significant exceptions staff groups maintain systems, gather data, and prepare exception reports

INTERACTIVE CONTROL SYSTEMS

WHAT	control systems that managers use to involve themselves regularly and personally in the decision activities of subordinates <i>Examples:</i> profit planning systems balanced scorecards project management systems brand revenue systems intelligence systems
WHY	to focus organizational attention on strategic uncertainties and provoke the emergence of new initiatives and strategies
HOW	ensure that data generated by the system becomes an important and recurring agenda in discussions with subordinates ensure that the system is the focus of regular attention by managers throughout the organization participate in face-to-face meetings with subordinates continually challenge and debate data, assumptions, and action plans
WHEN	strategic uncertainties require search for disruptive changes and opportunities
WHO	senior managers actively use the system and assign subjective, effort-based rewards staff groups act as facilitators

Diagnostic control systems are the management-by-exception systems that define span of accountability. If designed properly, these systems give top managers assurance that the goals of each work unit will be achieved. Diagnostic control systems are powered up by formal incentives and bonuses that are set in advance by formula. Interactive control systems supply signals for people to infer what is important in allowing the business to reposition itself over time. Interactive control systems absorb a great deal of management attention, but it is attention well spent, because it is leveraged throughout the whole organization and allows high ROM. Using a control system interactively forces the entire organization to

focus on strategic uncertainties—those assumptions about competition and distinctive competencies that keep the boss awake at night.

In tandem, diagnostic control systems and interactive control systems work together to allow the implementation of today's strategy, while at the same time allowing the organization to position itself for tomorrow's changing marketplace.

