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## Theory and Methodology

# A taxonomy of strategic decisions and tactics for uncovering alternatives

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### Abstract

The study determined how decision-makers uncovered alternatives for eight frequently occurring decisions and the success that was realized. A “cyclical search” in which repeated searches were carried out to learn about opportunities was successful for most of decisions, but rarely used. “Integrated benchmarking”, which merged useful practices and procedures from several sources, was successful for decisions about services. Design was successful when used for decisions involving products, reorganizations, and internal operations. Low effort tactics of simple benchmarking, single search, and idea were applied to nearly all of the decision types but were seldom successful. These findings will be used to suggest ways to improve practice. © 2001 Elsevier Science B.V. All rights reserved.

*Keywords:* Decision making; Decision types; Identifying alternatives

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### 1. Introduction

The situation being confronted by a decision-maker when making a decision is thought to influence its success (e.g., Harrison and Phillips, 1991; Eisenhardt and Zbaraci, 1992). A key factor in the situation being confronted is the type of decision to be made, such as devising a new product or reorganizations. The influence of decision type has yet to be studied empirically. This research effort sets out to fill this gap by determining the success realized when alternatives are

uncovered for the decision types suggested by Hickson et al. (1986). Such a study seems important because it fills an important gap in the literature and because it offers ways to improve decision-making success by matching decision types to tactics best suited for their use.

Such a study calls for a database of decisions and a way to identify tactics used to uncover alternatives, decision types, and success. The paper shows how decisions were collected for the study, documents the tactics used, determines type, and measures success. The analytical portion of the study connects the tactics, decision types, and tactic-type interaction (the explanatory variables) to success indicators, measured by development time, decision merit, and decision adoption. The

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main effects of tactic and decision type establish how success varies by the major classification variables. The interaction determines the how success is influenced for each decision type when a particular tactics is used to uncover alternatives. Statistical techniques will be used to determine if the tactics, decision types, and the tactic-type interaction influence the success indicators. To make the study feasible, a simplifying assumption was made. Only tactics used to uncover alternatives are considered because the success of these tactics seems particularly dependent on the decision to be made (e.g., a vendor search for an architect vs the advise of a colleague).

## 2. Strategic decisions and strategic decision-making

Most reviews of empirical research into decision-making find that the situation being confronted influences success (e.g., Harrison and Phillips, 1991; Eisenhardt and Zbarachi, 1992). This has prompted researchers to posit “situational dependence” theories in which factors such as domain (e.g., who is involved), task (e.g., uncertainty), and the like influence how a decision-maker should go about making a decision. These theories have lead to the development of contingency models for decision-making that suggest when to do careful evaluations, use power, involve stakeholders, and the like (e.g., Thompson, 1967; Vroom and Yetton, 1973; Lippitt and Mackenzie, 1976; Pfeffer, 1992; Daft and Weick, 1984). None of these models consider the decision to be made (Hickson, 1987). Failing to consider the decision, such as how to acquire the latest technology or develop a control system, seems to be an important oversight in this work. For example, using a vendor search may be an effective way to acquire a data processing system but less useful to find retirement buyout options. Finding tactics that work best for particular types of decisions offers a new avenue to look for ways to improve decision-making success.

In the discussion that follows, the key explanatory variables of decision type, tactics used to uncover alternatives, and the influence of decision type on tactic effectiveness are explored.

There is a small, but useful body of knowledge that accounts for how decision-makers uncover alternative and the influence of decision type. This literature will be augmented logical assessments of tactic strengths and weaknesses and from studies that explored topics related to decision-making.

Theory covering how decision-makers uncover alternatives is drawn from studies of organizational decision-making practice (e.g., Cyert and March, 1963; Witte, 1972; Bower, 1972; Mintzberg et al., 1976; Nutt, 1984a,b; Bryson et al., 1990; Dean and Sharfman, 1995). A review of this work suggests that a variety of theories can account for how alternatives are uncovered during decision-making. These theories suggest tactics that can be called “idea”, “benchmarking”, “search”, and “design”. The idea and benchmarking tactics apply ready-made ideas, the search tactic seeks out ideas, and the design tactic develops new ideas. Ready-made tactics use ideas that are immediately available, search looks for ideas, and design applies creativity to find innovative ideas.

The *idea* tactic attempts to draw on the store of fully developed solutions presumed to exist in most organizations. This seems reasonable because solutions often seek problems during strategic decision-making (Cyert and March, 1963; Cohen et al., 1976; Feldman and March, 1981; Janis, 1989). Staffers and line managers, who are assumed to be on the lookout for ways to put there per ideas and visions to use, are asked for their contributions. Proponents who are positioned to argue for their pet ideas and visions provide the alternatives. Eisenhardt and Zbarachi (1992) offer another interpretation in which decision-makers stumble on ideas that seem to fit their situation. Alternatives that crop up in this way are often described as “opportunities” (Mintzberg et al., 1976). This type of ready-made idea is seen as pragmatic because the cost of development is minimized and it allows for rapid action (March, 1981).

Benchmarking calls for decision-makers to adopt the practices of others to deal with a difficulty or concern that provoked a need to act (Nutt, 1999; Hart and Bogan, 1993). The decision-maker visits an organization or agency thought to be a high performer to find out what they are

doing that can be adapted for local use. Unlike the idea tactic, which draws on internal ideas, benchmarking goes outside of the organization to find practices that can be exported. In both cases, a fully developed idea is sought that can be used with minimal tailoring.

A *search* tactic identifies alternatives from available ideas (Soelberg, 1967; Bower, 1972; Witte, 1972; Mintzberg et al., 1976). The organization's needs are made known to vendors, consultants, and others who seem capable of helping. Proposals are elicited and compared to identify alternatives that seem viable, selecting one that seems to offer the best way to deal with the organization's concern or difficulty. Preparing requests-for-proposals and making careful assessments would be stressed.

A design tactic calls for a custom-made alternative. Decision-makers sponsor design hoping to produce innovation (Damanpour and Evan, 1984; Nutt, 1984a,b; Nadler and Hibino, 1990). Custom-made alternatives are often developed for products and services to provide competitive advantage in a market place (Mintzberg et al., 1976). The special demands posed a novel situation can make innovation seem attractive. In such situation, organizational decision-makers move away from quick fixes to a tactic that can demand longer time commitments and more resources.

There is little empirical evidence that ties these tactics to decision-making success beyond the single success stories often used by methodologists to exhort practitioners to adopt their tactics. Studies of decision-making frequently overlook the success of a decision and examine a limited number of decisions. The limited range of decisions and the absence of success measures make it difficult to determine how well a tactic works. However, the previous review shows that each tactic goes about uncovering alternatives in a different way, which is apt to produce different outcomes. For instance, some tactics seek innovation, others attempt to be timely, and still others favor low cost. Because the four tactics try to accomplish different things and go about uncovering alternatives in vary different ways expecting differences in their patterns of success seems reasonable.

H1. The tactics used to uncover alternatives influences the success of a decision-making effort.

Most studies of decision-making have lumped together several types of decisions in their analysis (e.g., Bryson et al., 1990; Soelberg, 1967). A notable exception is the "Bradford Studies" (e.g., Hickson et al., 1986). This stream of work identifies decisions that have common features from a study of 150 decisions in 30 organizations. In order of observed frequency, these decisions involved technologies, reorganizations, controls, markets, services, products, personnel, boundaries, and inputs. Table 1 provides a brief example for each decision type. Table 2 shows some or their unique features indicating how each decision type draws on different stakes and interests, calls for president or novel ideas, places different demands on innovation, has different needs for security, demands more or less effort, and has different time requirements. These features will be explored more fully in the discussion of types later in the paper.

Hickson et al. (1986) suggests that some of these decisions are more difficult to make than others are. For instance, product decisions have their success dictated by market acceptance. A personnel decision may hinge on the power of its champion. Bretschneider (1990) found that some of the Hickson et al. types were more successful than others, but did not consider all of the types. Coursey and Bozeman (1990) also report differences in success for some of these decisions. Such studies suggest that decision type may influence decision success.

H2. Some decision types are more apt to be successful than others.

Each of the decisions in Table 2 seems to call for special tactics. In the Hickson study, technologies, markets, services, and controls were associated with a full range of decision-making activities and the rest were associated with a much more limited range of approaches. Drenth et al. (1979), Mintzberg et al. (1976) and March and Olsen (1976) studied a much more limited range of

Table 1  
Types of decisions

Type	Example/Illustration
Technology	Whether to invest in infrastructure, such as machinery or buildings
Reorganizations	Choices among internal consolidations and rearrangements (e.g., combine departments, start a new international department) boundaries consider the same type of topic; focused externally (e.g., combining with another firm, acquire another company)
Controls	Selecting among options for planning, budgeting, data processing, etc. used to monitor inputs and outputs
Marketing	Pricing and distribution choices, such as developing new market channels or a new customer base
Products	Selecting among new product options that can be sold to customers
Services	Choosing among new offerings sold or made available to clients as part of a contract
Personnel	Decisions involving job training and assessments carried out to build human resources or to reward them (e.g., benefit plans)
Financing (inputs)	Decisions on how to garner funds, raw material, and other inputs
Location	Choices among sales offices or plant sites

Table 2  
Features of the decision types (key features<sup>a</sup>)

Types	Stakes and interests	Available precedents	Importance of new ideas	Need for secrecy	Scale of effort	Time required
Technology	Varies	Many	Low	Moderate	Moderate to large	Long
Re-Organizations	High	None	High	High	Very large	Long
Controls	Varies	Many	Moderate to high	Low	Moderate	Short
Marketing	Varies	Few	High	High	Moderate to large	Short
Product	High	Few	High	Very high	Moderate to large	Long
Service	High	Some	Moderate	Moderate	Moderate	Long
Personnel	Moderate	Many	Moderate to high	Low to moderate	Small	Short
Financing (inputs)	Low	Several	Moderate to high	Moderate to high	Small	Moderate
Locations	High	Many	Moderate to high	High	Small	Short

<sup>a</sup> Interpreted from the Hickson et al. (1986) data or conclusions.

decisions and also found that some types of decisions required innovation more than others.

### H3. Decision type influences the success of tactics used to uncover alternatives.

Because previous studies have failed to consider decision outcomes, decision types, and/or tactics there is little empirical evidence to suggest when to use a particular tactic. To fill this gap, the unique features of idea, benchmarking, search, and design will be explored to identify conditions under which

each can be successfully used. These features and the strengths and weaknesses of each tactic will be examined to determine what seems to be the best way to uncover alternatives for each type of decision, offering a hypothesis for each tactic applied to each decision type.

Custom-made alternatives seem best suited to decisions that have few precedents, require new ideas, and/or demand high levels of secrecy. Products and service decisions put a premium on new ideas and re-organizations often have unique needs and requirements, stemming from the or-

organization's pattern of doing business, suggesting tactics good at innovation. All three-decision types seem to call for secrecy because leaks could damage an organization's competitive advantage. For example, to be viable in the marketplace products and services must be innovative and occasionally radically innovative (new to the industry) and sequestered until the development has been completed (Dramanpour, 1991). This calls for "design". Reorganizations stem from organizational arrangements based traditions, culture, and treaties that few, but insiders, would fully appreciate. Devising new arrangements to fit a novel organizational situation also suggests design as a way to generate alternatives. Search, benchmarking, and idea tactics are less able to provide innovative ideas and can reveal a competitive advantage, making them seem undesirable.

H4. Product, service, and re-organization decisions are more successful when the design tactic is used to uncover alternatives.

Technology decisions involve infrastructure that is created for special and general-purpose use. Most organizations would not have, or want to have, the capacity to design alternatives for a technology decision. Instead, finding what is available and matching turnkey systems to the organization's needs seems to be an efficient and effective way to generate alternatives. This suggests the search tactic.

H5. Technology decisions are more successful when alternatives are uncovered with a search tactic.

Control and personnel decisions are less likely to involve an organization's competitive advantage than product or service decisions. As a result, organizations may be willing to share what works for them. Strategic planning procedures, training ideas and mentoring approaches, billing systems, and budgeting approaches are often found in the materials submitted by Baldrige Prize applicants, suggesting that revealing these practices has few financial implications. As a result, benchmarking

seems to be an efficient and effective way to generate alternatives for these types of decisions.

H6. Control and personnel decisions are more successful when alternatives are provided by a benchmarking tactic.

Marketing decisions involve price and niche considerations that effect an organization's competitive advantage. It would seem that organizations would not want to involve outsiders in such a decision, which rules out search and benchmarking. Either the design or idea tactic could be used. The need for a speedy decision may suggest the idea tactic, drawing on the best internal sources to fashion alternatives. Financing decisions involve sensitive discussions draw in aspects of competitive advantage that most organizations would not be willing to disclose. As a result, idea and design are the only tactics that seem feasible. The design tactic would be preferred (excepting short fuse situations) but few financial people would have the skills to use such a tactic. Drawing on these ideas of CFOs and their staff seems to have the best prospect of success for input decisions.

H7. Marketing and financial decisions are more successful when alternatives are provided with an idea tactic.

To address the hypotheses calls for a study that has both qualitative and quantitative features. Qualitative methods are needed to identify the tactics used by decision-makers to uncover alternatives during decision-making. This would include a description of how the tactics were applied in practice, how each corresponds to the tactics described in the literature, and how frequently each tactic was used by decision-makers. The same approach is required to uncover and describe decision types, whether the types correspond to those described by Hickson et al. (1986), and to look for other types. The study must also measure the success of each decision. The qualitative phase of the project determines the success of the tactics, the decision types, and each tactic-type combination.

### 3. Methods

A database made up of 376 strategic decisions was analyzed to test the hypotheses. The decisions in the database came from private (34%), public (22%), and private non-profit (44%) organizations. The primary informant (the decision-maker) was typically well placed in the organization. Thirty-four percent were CEOs and nearly two-thirds were top executives (CEOs, COOs, and CFOs). The secondary informants were line managers with knowledge of the decision. They were subordinates of the primary informant in 56% of the decisions, a staff person in 37% of the decisions, and a task force member in 8% of the decisions. The organizations were widely dispersed across the United States and Canada. A single decision was taken from each organization. Table 3 provides some illustrations of the organizations, decisions, and decision types in the case database. This diversity of decision types and organizations indicates that a broad range of decision practice was included in the study so the study's findings should generalize. The cases in this study, like similar studies reported in the literature (e.g., Boal and Bryson, 1987; Hickson et al., 1986; Mintzberg et al., 1976; Witte, 1972; Bower, 1972), do not represent a random sample. Organizations may prefer to share information about decisions they believe to be of high quality if so, this would create a disproportionate number of successful decisions. However, the initial failure rate of 38% and a downstream failure rate of 50% for decisions in the data base indicate that both good and questionable practices have been captured.

#### 3.1. Data collection

Three informants in each participating organization were interviewed and documents that described the decision were collected. The author carried out the interviews, surveys, and document collections. The decision-maker was interviewed and asked to describe the decision and then spell out the sequence of steps that were taken to make it. A written summary of these steps was prepared. The summary was presented to the primary informant (the decision-maker) to verify that the steps were

accurately recorded. If not, the primary informant was asked to make the necessary modifications. In a separate interview, one of the two secondary informants was asked to provide the same information, following the same protocol. The process descriptions from the primary and the secondary informants were then compared. When differences were noted, an additional interview with the decision-maker was carried out to reconcile the differences. This sharpened recall, which improved validity. A decision was retained for the classification phase of the study if two tests were met: sufficient detail to understand what had been done and agreement about the sequence of events. Twenty-six cases failed to meet these tests and were dropped.

#### 3.2. Uncovering tactics

The cases were reviewed, one at a time, to discover how alternatives were uncovered by the decision-maker. Two sources of information were used: the summaries and the documents that were collected. The case summary was consulted first. A search was made to determine when alternatives were first mentioned in the summary, backtracking to find out their origin. Each case was studied to pick out the practices followed to uncover alternatives. For example, in some cases the decision-maker imposed an idea and in others vendors were contacted by the decision-maker and asked to bid on the job. These practices seemed different because the ideas being considered had different origins. Documents that had been collected for a case were then consulted to verify that a tactic, such as a search, had been carried out. For example, finding a list of vendors verified that a search had been conducted. My initial classifications were reviewed a second time to look for additional distinguishing features. Cases in which the decision-maker went about uncovering alternatives in the same manner were placed together. Then, the similarities were verified, documenting the decision-maker's actions. Decisions that seemed to follow different practices were compared to see if the differences held up. The categories that emerged were named to indicate how alternatives were uncovered.

Table 3  
Illustrations of organizations and decisions in the case date base

Organizations <sup>a</sup>	Decisions (decision types)
University Hospital	Scheduling O.R. (control)
Ross Laboratories	Infant formula for developing countries (marketing)
Florida Medicaid Division	Fraud management system (control)
Ohio DNR	Supporting wildlife programs (input)
US Air Force	Procurement (control)
NASA	Decompression service (service)
Veterans Administration	Restructuring (reorganizing)
Burgiss-Niple	Lab for toxic materials (technology)
Ohio DOT	Budget system revamping (control)
Sisters of Mercy Hospital System	Governance structure (reorganization)
Public School System	Redesign curriculum (service)
US Navy	Radar development (service)
NCR	Cash flow management (control)
Korean Tire Co.	Marketing in South America (marketing)
Wadsworth Publishing Co.	Republishing books as tapes (product)
Nationwide Insurance	Computer system capacity (control)
Allied Van Lines	Pricing services (marketing)
Marshall Fields	New product line (product)
Bank One	Selling Visa cards (product)
Fifth-Third Bank	Dropping Saturday service (product)
GE	MRP system (control)
National City Corp.	Private label credit card (product)
Lennox	Recycle toxic waste (control)
Electronics	Inventory control system (control O)
Anthony Thomas Candy	New product (product)
Delco	Tariff management (control)
CompuServe	New on-line service (product)
Bethlehem Steel	Scheduling blast furnace maintenance (control)
Battelle	Contract bidding (control)
Toyota	Increasing sales (marketing)
Large urban city	Creation of retirement center (service)
Limited, Inc.	Purchase an information system (technology)
American Electric Power	CAD/CAM system (technology)
General Motors	Robotic assemblers (technology)
Korean Airlines	Staff cut back (control)
Huntington Bank	Billing and collections procedures (control)
American Telephone & Telegraph	Selling an MRP system (product)
400 bed acute care urban hospital	Add a lithotripsy service (service)
McDonald-Douglas	TQM teams (control)
575 bed acute care urban hospital	Select a radiation treatment simulator (technology)
Dunning Lathrup Insurance	Modify bonus policy (personnel)
Hertz-Penske Rental	Customer service system (control IO)
1000 bed university hospital	Purchase a magnetic resonance imager (technology)
343 bed acute care hospital	Add a pulmonary treatment program (service)
City health department	Half way house for the deaf (service)
500 bed acute care urban hospital	Add open heart surgery (service)
1000 bed acute care urban hospital	Provide a helicopter transportation service (service)
250 bed rural acute care hospital	Create a De-Tox unit (service)
Lane Bryant, Inc.	Intimate Apparel (product)
For-profit abstracting company	Devise a reference library (product)

<sup>a</sup> Some organizations requested anonymity.

To make this classification, each case summary was put into a pile with other summaries that uncovered alternatives in the same way. A code number was placed on the back of each summary. The sorting process was then repeated. Decisions found to have an ambiguous classification were carefully reviewed in an attempt to create a new category or to match it with an existing one. To get an indication of intrarater reliability, sorting was repeated again a year after all cases had been accumulated, with the previous classifications concealed. These classifications had 100% agreement. To get an indication of interrater reliability, a colleague was asked to sort a 20% sample of the summaries and indicate how alternatives were uncovered for each decision. These descriptions were compared to the one developed by the author, asking whether they agree. The yes or no response was then recorded. Interrater reliability was calculated as the percentage agreement in the classifications between classifiers. The classification agreement was quite high (94%) suggesting that independent tactic categories had been reliably identified (Lincoln and Guba, 1984).

This analysis found that tactics with unique steps were used for 340 or 90% of the decision studied. (The others lacked sufficient information to classify them or switched tactics.) The results are shown in Table 4, which lists the tactics used by decision-makers in this study to uncover alternatives and compares each tactic in terms of its key steps, and frequency of use, and how alternatives

were uncovered. Analysis revealed that benchmarking was used in 19% of the decisions, design in 24% of the decisions, decision-makers imposed an idea in 28% of the decisions, and search was used in 20% of the decisions. In addition, variations on the approaches used to carry out search and benchmarking were identified, which identified two previously undiscovered tactics.

### 3.3. Finding decision types

The narratives contained considerable information about the decision that was made. The author reviewed the narratives and matched them to the categories suggested by Hickson et al. (1986). The same procedure used to uncover tactics was applied. After an initial sort, the classifications were reviewed to find those that failed to match the types suggested by Hickson (Table 1). Classification was then repeated. The initial classification was concealed in subsequent sorts. After the third sort, there was perfect agreement with the previous classifications, suggesting that a stable set of decision types had been identified. Interrater reliability was determined by having the same colleague match a 20% sample of the decision narratives to the types in Table 1, using the illustrations in the table as a guide. A 100% interrater agreement in the decision type matches resulted.

Table 5 summarizes the results. All of Hickson's decision types were found, except for "input de-

Table 4  
Tactics used to uncover alternatives

Tactic	Number	%	How alternatives uncovered
Cyclical search	9	3	Multiple searches in which needs are redefined according to what is available
Integrated benchmarking	21	6	Amalgamation of ideas from several outside sources
Search	69	20	A single search cycle with a decision after RFP responses received
Benchmarking	64	19	Adapt a practice used by another organization
Design	82	24	Develop a custom made solution
Idea	95	28	Validate and demonstrate benefits of an pre-existing idea known to organization
Total	340	100	



Table 5  
The success of tactics and decision types

Factor Tactic	N	Freq	Initial adoption		Complete adoption		Decision value		Duration	
			Rate	DMRT <sup>a</sup>	Rate	DMRT	Rating <sup>b</sup>	DMRT	Time <sup>c</sup>	DMRT
Cyclical search	9	3%	100%	A	100%	A	4.0	A	6.0	A
Integrated benchmarking	21	6%	71%	B	57%	B	4.2	A	9.8	D
Search	69	20%	63%	C	51%	C	3.4	B/C	11.8	E
Benchmarking	64	19%	59%	D	51%	C	3.6	B	7.5	B
Design	82	24%	63%	C	53%	C	3.7	B	9.6	D
Idea	95	28%	58%	D	41%	D	3.5	B/C	8.5	C
Total	340	100%								
Statistical significance			$P \leq 0.03$		$P \leq 0.01$		$P \leq 0.05$		$P \leq 0.02$	
<i>Decision type</i>										
Reorganizations	26	8%	69%	A	57%	A	3.9	A/B	13.9	D
Control systems	48	15%	62%	B	56%	A	3.5	B	4.1	A
Services	81	24%	68%	A	54%	A/B	3.7	A/B	7.5	B
Technology	58	17%	61%	B	50%	B	4.3	A	16.5	E
Marketing	16	5%	63%	B	50%	B	3.5	B/C	5.0	A
Internal operations	58	17%	58%	C	47%	C	3.8	A/B	8.7	B
Personnel	19	6%	74%	A	37%	D	3.6	B	7.2	B
Products	25	8%	44%	D	36%	D	3.4	B/C	9.6	C
Total	331	100%								
Statistical significance			$P \leq 0.02$		$P \leq 0.04$		$P \leq 0.05$		$P \leq 0.01$	
Total			62.4%		50.3%		3.65		9.3	

<sup>a</sup> Duncan multiple range test (DMRT): Letter codes signify statistically significant differences in the means,  $P \leq 0.05$ .

<sup>b</sup> Scale: 5 = outstanding; 4 = good; 3 = adequate; 2 = disappointing; 1 = poor.

<sup>c</sup> Time measured in months from recognition of the need to act to the end of development.

cisions”. Also, a new type called “internal operations” was uncovered. The distinction between controls and internal operations stems from their scope. Controls were carried out without assisting in product or service creation, whereas an internal operation provided information to help with in the creation of products and services as well as to monitor productivity and quality.

### 3.4. *Determining success*

The consequences of a decision can have many effects that make a single measure unwise. Success is dependent on use, value, and the time required. These success indicators are conceptually independent because decisions with intrinsic value may not be implemented and vice versa, and the adopted as well as the high valued decision can require short or long time periods to develop the idea. For example, a decision may be adopted but only after an extended period of time employing considerable effort and have little effect. Others may be used immediately and be quite valuable. This suggests that development time, adoption, and value captures several facets of a successful decision. To avoid self-serving assessments about success, decision-makers were not asked to make these evaluations.

Pragmatic considerations suggest adoption as a success indicator. Success for a manager is bound up in use (Hickson et al., 1986; Beyer and Trice, 1982). If a decision is put to use it meets this test. However, use can be defined several ways. Pelz (1978) differentiates between symbolic, conceptual, and instrumental use. Symbolic and conceptual uses involved changes in conventional wisdom and awareness that enlightens people or attempts to legitimize a plan of action. Neither deals with actual use. Instrumental use was selected to measure adoption because it gets closer to what a decision intends: the institutionalization of new practices.

For example, a planning system would be adopted if installed, and a merger would be adopted if carried out. The two secondary informants determined whether a decision was initially adopted or rejected using the criterion, “put to use”. To capture changes, decisions were tracked

for two years to determine important qualifications. Several kinds of changes were observed. First, some decisions were adopted only in part because of limited use, such as departments that refused to use a budgeting system or used only some of its capabilities. Other decisions experienced substantial delays in adoption. Finally, some decisions measure was created to capture downstream changes in a decision. In this measure, partial and ultimate adoptions were excluded from the success category and ultimate rejections. A complete adoption measure was created to capture downstream changes in a decision. In this measure, partial and ultimate adoptions were excluded from the success category and ultimate rejections, as they turned up, were treated as rejected decisions. Because partial adoptions were treated as failures, the complete adoption measure provides a more stringent test of use than initial adoption. Both the initial and complete adoption measures were used to gauge decision success.

The intrinsic value of a decision to the organization provides another kind of success indicator. Decisions with intrinsic value may not be pragmatic, making value an important and independent facet of success. Objective data describing the economic returns or benefits of a change are desirable to measure value, but these indicators proved to be difficult to collect. Most organizations are reluctant to provide access to information, such as money lost or gained, and claim that reconstructing economic benefits and the like for a particular decision would be prohibitively expensive (Nutt, 1984a,b). Organizations seem to avoid retaining information of this type, perhaps to avoid facing embarrassing questions (Ritti and Funkhouse, 1987; Nutt, 1989). Alexander (1986) finds that managers can identify subjective indicators that correlate with objective indicators. As a result, researchers who study decisions use subjective measures of value to capture a decision’s value (Bryson and Cullen, 1984; Hughes et al., 1986).

Subjective assessments of value were obtained from ratings made by the secondary informant. An anchored rating scale with five anchors was used to obtain these ratings. The scale anchors were defined as 5 = outstanding, made a decisive contri-

bution; 4 = good, useful in several ways; 3 = adequate, met some needs; 2 = disappointing, several problems remain; and 1 = poor, no redeeming features. The secondary informants were asked to check anywhere along the rating scale to reflect their views. The two secondary informants reviewed and reconciled their initial ratings by using the estimate-discuss-estimate or EDE procedure (Nutt, 1992a,b). Multiple informants and the EDE procedure were used to reduce “common method variance” (Podsakoff and Organ, 1986) often found in this type of data. These steps also helped to improve informant recall and enhanced the precision of the data. An average of the final rating by the secondary informants was used to characterize merit of each decision.

Development time was determined by the elapsed time in months from need recognition to the end of development in which an alternative was selected for implementation. Recall of the secondary informants was refined by a discussion of the initial time estimate, using the EDE procedure. The average time in months from the final assessment was used in analysis.

### 3.5. Analysis

Data analysis was guided by the assumptions made in the theoretical model that describes the relationships under study. The explanatory variables are made up of categorical factors that can be main effects, can combine to create an interaction effect, or can be both an interaction and a main effect. Box and Draper (1987) show that ANOVA is the appropriate approach to use when the theoretical model posits a combination of main effects and interactions in which the explanatory factors are categorical variables. Four ANOVAs were carried out, one for each of the four dependent variables depicting decision success (initial adoption, complete adoption, value rating, and development time). In these ANOVAs, the explanatory variables were made up of tactics, decision types, and the tactic-type interaction. A Duncan multiple range test was then used to isolate difference in the dependent variables associated with categories that make up tactics, decision

types, and tactic-decision type combinations. The results appear in Table 5.

The tactic and decision type interaction was found to have missing observations (combinations that did not occur in the cases) and tactic-decisions type combinations with insufficient observations to draw conclusions. To find combinations with significant differences, the interaction term was re-examined as a one way ANOVA with each tactic-type combination that had three or more observations as the explanatory factor. This allowed tactic-decision type combinations to be assessed two at a time with a DMRT to test the hypotheses. The results are presented in Table 7.

## 4. Results

Differences in the success measures for decision types, tactics, and the tactic-type interaction are used to test the hypotheses. Tables 5–7 summarize the success of the decision type, tactics, and the tactic-type interaction. Table 8 offers a summary of the findings.

### 4.1. Tactics

The six tactics used by decision-makers in this study to uncover alternatives had different patterns of success, which supports H1. The discussion shows how each tactic was applied by a decision-maker, as well as its frequency of use and its record of success.

*Idea tactics.* Analysis of the cases revealed that an “idea tactic” was used to uncover alternatives when the decision-maker stumbled upon a solution or offered a pet idea. In these cases, decision-makers pushed one of their ideas or were seduced by the pet ideas of subordinates and others in their organization. Developmental steps were carried out to validate the idea that captured the attention of the decision-maker and then to promote it. This tactic resembles the “garbage can” theory of March (1994) in which solutions and opportunities to apply them meet by accidents of timing, and the ready-made approach noted by Mintzberg et al. (1976). Idea tactics were used in 28% of the

Table 6  
Use of tactics for types of decision

Tactic	Decision type							
	Reorg <sup>a</sup>	CS <sup>b</sup>	Serv <sup>c</sup>	Tech <sup>d</sup>	Mkt <sup>e</sup>	Oper <sup>f</sup>	Pers <sup>g</sup>	Prod <sup>h</sup>
Cynical search	–	2	1	5	–	1	–	–
Integrated benchmarking	2 <sup>i</sup>	2	9	2	2	2	2	–
Search	5	8	10	23	2	14	2	1
Benchmarking	5	13	24	8	6	4	3	1
Design	7	10	14	10	4	19	6	11
Idea	7	13	23	10	2	18	6	12
Total	26	48	81	58	16	58	19	25
Cyclical search	–	4%	1%	9%	–	2%	–	–
Integrated benchmarking	8% <sup>j</sup>	4%	11%	3%	12%	3%	11%	–
Search	19%	17%	12%	40%	12%	24%	11%	4%
Benchmarking	19%	27%	30%	14%	38%	7%	16%	4%
Design	27%	21%	17%	17%	25%	31%	31%	44%
Idea	27%	27%	28%	17%	12%	31%	48%	48%
Average	100%	100%	100%	100%	100%	100%	100%	100%
Average	17%							

<sup>a</sup> Reorg: Reorganization decisions.

<sup>b</sup> CS: Decisions involving control systems.

<sup>c</sup> Serv: Decisions about services.

<sup>d</sup> Tech: Decisions involving technology.

<sup>e</sup> MKT: Marketing decisions.

<sup>f</sup> Oper: Decisions involving internal operations.

<sup>g</sup> Pers: Personnel policy decisions.

<sup>h</sup> Prod: Decisions involving products.

<sup>i</sup> Frequency of cases.

<sup>j</sup> Percent of column total.

decisions, a frequency of use that is lower than that suggested by the literature (e.g. Cyert and March, 1963; March, 1981; Mintzberg et al., 1976). The idea tactic had a 58% initial adoption rate, which fell to 41% for complete adoptions, the lowest rate of adoption observed in the study (Table 5). The resulting decisions had the lowest average merit rating observed in the study. Decisions required an average of 8.5 months to carry out. Other tactics produced much more timely decisions.

*Search.* A search tactic was used when decision-makers solicited ideas from outsiders. First, an attempt was made to clarify what was needed. The needs that were identified provided a basis to prepare a request for proposal (RFP) that was sent to vendors, when needs seemed clear, and to consultants, when needs seem vague or uncertain. This prompted the RFP recipient to offer their pre-packaged ideas showing how these ideas could cope with the organization's needs. For example, a

computer manufacturer interpreted the information storage needs of a client company as a retrieval system that could be sold by the vendor along with several off-the-shelf software packages. Search tactics were used in 23% of the cases.

Not all searches were successful. For example, the Allied Van Lines World Headquarters building, in suburban Chicago, was 11 years into a 15 year lease when Allied's landlord offered them a new lease with lower rates, prompted by recent interest rate declines. Allied became suspicious and they decided to test the arrangement by searching for market information about similar leases. With this information Allied produced a counter proposal calling for \$5 million less in lease costs than that proposed, 30% ownership in the building, and a 30-year lease to accommodate the joint ownership. The search for terms disclosed that Allied did not trust that landlord, and that the landlord had offered a very fair package. Thinking that a trust

Table 7  
The effect of type of decision on tactic success

Tactic	Decision type							
	Reorg <sup>a</sup>	CS <sup>b</sup>	Serv <sup>c</sup>	Tech <sup>d</sup>	Mkt <sup>e</sup>	Oper <sup>f</sup>	Pers <sup>g</sup>	Prod <sup>h</sup>
<i>Initial adoption (percent adopted)</i>								
CS <sup>i</sup>	–	*	*	100%	–	*	–	–
IB <sup>j</sup>	*	*	89%	*	*	*	*	–
Search	40%	75%	80%	68%	*	57%	67%	*
Benchmarking	40%	38%	71%	63%	67%	50%	*	*
Design	100%	56%	50%	70%	50%	74%	50%	45%
Idea	71%	69%	59%	30%	*	47%	67%	42%
<i>Complete adoption (percent complete adoption)</i>								
CS	–	*	*	100%	–	*	–	–
IB	*	*	78%	*	*	*	*	–
Search	40%	63%	60%	56%	*	50%	33%	*
Benchmarking	40%	38%	59%	37%	67%	50%	*	*
Design	86%	50%	36%	50%	50%	58%	50%	45%
Idea	43%	62%	48%	30%	*	33%	50%	25%
<i>Decision value (scale: 1 = poor to 5 = outstanding)</i>								
CS	–	*	*	4.0	–	*	–	–
IB	*	*	4.6	*	*	*	*	–
Search	3.4	3.1	3.9	3.6	*	3.9	2.3	*
Benchmarking	4.4	3.3	3.6	3.6	3.8	3.5	*	*
Design	4.2	3.7	3.4	3.7	3.0	4.2	3.6	3.3
Idea	3.4	3.7	3.5	3.0	*	3.3	4.0	2.5
<i>Duration (in months)</i>								
CS	–	*	*	7.0	–	*	–	–
IB	*	*	8.4	*	*	*	*	–
Search	11.4	4.6	5.3	19.5	*	12.0	9.0	*
Benchmarking	14.0	3.5	9.4	5.4	4.7	3.5	*	*
Design	18.7	3.9	8.7	23.4	3.7	3.9	4.4	24.0
Idea	12.6	4.3	5.2	12.9	*	15.8	7.0	13.4

<sup>a</sup> Reorg: Reorganization decisions.

<sup>b</sup> CS: Decisions involving control system.

<sup>c</sup> Serv: Decisions about services.

<sup>d</sup> Tech: Decisions involving technology.

<sup>e</sup> MKT: Marketing decisions.

<sup>f</sup> Oper: Decisions involving internal operations.

<sup>g</sup> Pers: Personnel policy decisions.

<sup>h</sup> Prod: Decisions involving products.

<sup>i</sup> CS: Cyclical search.

<sup>j</sup> IB: Integrated benchmarking.

\* Insufficient observations.

relationship had been broken the landlord leased the building to another party who had made a slightly better offer. Had the negotiation not broke down over issues of trust, the landlord would have taken a bit less in revenue from Allied to retain an “old and valued customer”. In this case, the search tactic revealed more than it provided, and thwarted the effort.

Search was carried out in two ways. In 20% of the decisions, a *single search* was used in which the decision-maker obtained a single round of bids. For instance, the controller in one of the cases sent out a single RFP and selected among software packages for automated billing by comparing the costs and capabilities of proposals submitted by those offering a bid. The single search tactic had a

Table 8  
Summary of prescriptives

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*Tactic success and frequency of use*

- A cyclical search tactic is more successful than any other tactic, but seldom used. Wider use of this tactic seems both feasible and highly desirable
- Integrated benchmarking had more success than simple benchmarking, which was used three times more often
- Idea tactics were used less often than previously reported in the literature and were generally unsuccessful

*Decision dependent tactics*

- Reorganization decisions have more success when design tactics are used and have very little success when simple search and benchmarking tactics are applied
  - Design tactics are more successful than idea tactics for product decisions
  - Service decisions were more successful when search or integrated benchmarking tactics were used and much less successful with design and idea tactics were applied
  - Technology decisions were more successful when a cyclical search tactic was used and much less successful when idea tactics were applied
  - Personnel decisions were more successful when idea tactics were used and less successful with benchmarking tactics
  - Marketing (design) decisions improve with ready-made ideas (idea and benchmarking) and decline with custom-made ideas (design)
  - Internal operation decisions have the most success with design and the least success with idea tactics
  - Control decision success are unaffected by tactics used to uncover alternatives
- 

63% initial adoption rate, a 51% complete adoption rate for decisions judged to be adequate to good (3.4) and required an average of 11.8 months to complete.

Decision-makers who applied a cyclical search tactic set out to learn about possibilities and to apply this knowledge to fashion more sophisticated searches. Each new search incorporated what has been learned in past searches. The initial search learned about available ideas and subsequent searches exploited this knowledge by writing request for proposals or RFPs that recognize cutting edge capabilities. The Department of Defense (DOD) uses a variation of this approach to procure military hardware. Defense contractors are asked for “concept designs” of fighter planes, radar, submarines, missiles, and the like that can outperform hardware currently in use. DOD learns from these concept designs and asks for new bids. The new RFP is able to incorporate a better understanding of pertinent developments in metals, propulsion, electronics, and the like.

Decisions made with a cyclical search were rated as good (4.0), very efficient, requiring 6.0 months for development, and had very high acceptance rates: 100% were adopted. A cyclical search was more effective and more efficient than a

single search. This somewhat surprising finding can be attributed to problems in evaluation that arose during a single search. Decision-makers in the cases that used a single search tactic had a difficult time selecting among the alternatives. Multiple searches produced clarity in what was needed and lead to rapid choices and shorter development times. Despite its clear superiority, a cyclical search tactic was used in just 3% of the cases, compared to 20% for a single search.

*Benchmarking.* Adapting the practices of organizations thought to be successful was used in 25% of the cases (Table 5). A high profile organization was visited to get ideas that were tailored to fit the decision-maker’s organization. Benchmarking differs from both the idea and the search tactic. The idea tactic applies a ready make solution without tailoring. Benchmarking seeks out and then modifies an idea to fit the new situation. Search tactics have a step in which a statement of needs is prepared to solicit responses and an evaluation step. Benchmarking had an implicit, unstated set of needs, and no evaluative step. Decision-makers acted as if they knew a good solution when they saw it. The decision-maker made a plant visit to observe a practice thought to be useful and make a judgement about its value, making a formal eval-

uation seem redundant. Decision-makers using the search tactic spend considerable time and effort conducting formal evaluations.

Benchmarking was also carried out in two ways. In the simple version, the practices of a single organization or work unit thought to be a high performer were examined. Developmental activities were confined to making changes that would allow the idea to be successfully applied by the borrowing organization. Simple benchmarking was used in 19% of the cases and had only modest success. Fifty-nine percent of these decisions were initially adopted, which fell to 51% for complete adoptions, for decisions judged to be between good and adequate. This approach was efficient, taking an average of 7.5 months, one of the shorter periods of development noted in the study.

*Integrated benchmarking* explored seemingly relevant practices from several organizations, amalgamating the best ideas into a plan. For instance, in one of the decisions, examining the organizational arrangements used by similar, successful organizations provided the plan to restructure the organizational. The practices and procedures pertinent to the circumstances faced by the adopting organization were then incorporated into the proposed reorganization plan. Thus, a composite, made up of the practices and procedures taken from several sources, was created. Integrated benchmarking was rarely used, being observed in just 6% of the cases, but produced better results than simple benchmarking. The initial adoption rate was 71% and complete adoption was 57% (Table 4). The resulting decisions were judged to be somewhat above good (4.2). Development took more time, taking an average of 9.8 months to carry out.

*Design.* A design tactic was used to fashion a custom made solution (e.g., Mintzberg et al., 1976; March, 1981). New ideas were sought without any reference to ready-made ideas, the practices of others, or the ideas of vendors. Staff groups, such a R&D or engineering, or consultants were often asked to create a new procedure or to devise a new product or service. Design was observed in 24% of the cases. Design had a 63% initial adoption, which fell to 53% for complete adoptions. The results were judged to be good (3.7), but took 15.3

months to complete, making design one of the least timely ways to uncover alternatives.

#### 4.2. Comparing the tactics

Decision-makers often used ineffective tactics to uncover alternatives. Using the more effective tactics of cyclical search and integrated benchmarking instead of single search, simple benchmarking, and idea tactics can improve the prospect of success. The lack of success of single search, simple benchmarking, and idea tactics can be attributed to several factors. Imposing a ready-made idea was often seductive. Decision-makers see such tactics as pragmatic because ambiguity about what to do can be quickly swept aside, reducing the threat in an unresolved concern. However, when decision-makers imposed a ready-made solution, as in the idea or benchmarking tactics, it limits the number of alternatives that are considered. A reading of the cases suggests that decision-makers that used idea or single benchmarking tactics spend considerable time trying to retrofit the idea. Idea and single benchmarking tactics seem to provide alternatives that were often selected in haste, with little reflection, and then require considerable tailoring later in the decision process. Furthermore, decision-makers using ready-made solutions often had hidden motives. As Starbuck (1983) notes, choice opportunities entice decision-makers to bring out self-serving ideas that are unrelated to any organizational priority. Resources are then mobilized to justify the idea, keeping the organization from looking for other possibilities.

Single searches open up the search process but allow limited opportunity for learning, compared to the design, integrated benchmarking, and the cyclical search tactics. These tactics called on a decision-maker to engage in a process of reflection in which possibilities were carefully studied. This investment paid dividends by improving merit and adoption, and by saving time. A timesaving is realized because the repair of a favored alternative occurred less frequently and took much less time and effort when it did occur. Integrated benchmarking and cyclical search provide better results because both encourage learning and avoid the

premature selection of a course of action (Pettigrew, 1985; Kobe, 1983).

#### 4.3. Decision types

The eight decision types had very different patterns of success, supporting H2 (Table 5). In the discussion that follows each of these decisions is illustrated, along with its observed frequency and success.

*Reorganization decisions.* Hickson et al. (1986) found that reorganizations were high-stakes large-scale efforts that occurred infrequently. Consistent with this stream of work, reorganizations were found to be important and to occur somewhat infrequently.

The reorganizations in my cases blurred the internal and external distinctions noted by Hickson and his colleagues. Reorganization decisions often included finding locations or re-locations as part of mergers, consolidations, and buyouts that took place internally (e.g., department mergers and phase outs), and externally (e.g., purchasing a drug company for its market channels). Reorganization decisions often made these internal and external moves at the same time. Mergers and buyouts, for example, often led to departmental phase outs or combinations of two or more departments, as well as new locations. It proved impossible to separate the internal from the external location decisions so they were combined under the label “reorganization”.

Reorganizations occurred in 8% of the decisions and produced some of the best results observed in this study. These decisions had the highest rates of adoption, producing “good” consequences, but took an extended time period to fully develop, reflecting the importance attached to these decisions by key people. The cases suggest that top managers were often involved in this type of decision. For instance, the Sisters of Mercy revamped their governance structure to make it more secular and business-like. The board and the lay top management were involved over an extended period of time to fashion a structure that met the order’s values and its goals for business-like operation.

*Personnel decisions.* Decisions that considered bonus plans, wage and salary policy, retirement plans, early buyouts, and the like were observed in 6% of the cases. These decisions seemed much like those encountered by Hickson et al. (1986) and, like their study, occurred somewhat infrequently. Personnel decisions were carried out in an average of 8.7 months with high rates of initial adoption (74%) that fell dramatically to 37% for complete adoptions, which treats partial use and limited use failures. Personnel decisions were comparable in quality to the typical decision, but soon unraveled. The propensity to periodically revamp personnel policy may make such decisions more transient than the other types.

*Service decisions.* These decisions were also much like those studied by Hickson et al. (1986). For example, hospitals opened an open-heart surgery unit, a state department of natural resources offered a wildlife protection program, and a historical society started a Christmas program in their re-creation of a pioneer village. Service decisions made up 24% of the cases and experienced considerable success. This type of decision had a 68% initial adoption and a 54% complete adoption rate for decisions seen as just below “good” developed in 7.5 months. Service decisions appear to be low risk because service costs are subsidized so pricing does not reflect their cost. For example, heart surgery in a hospital is very expensive so its costs are covered by third party payers (insurance carriers, Medicare–Medicaid), research funds, foundation assistance, and still other sources. No one party monitors an individual’s total bill before paying their “share”.

*Product decisions.* These decisions took shape as offerings to the market place, making changes in a product to differentiate it from others, cut its cost, design it better, and/or make it appeal to a new group of customers. Product decisions were found in 8% of the cases and had the poorest success of any decisions considered in the study, with the lowest adoption rates and poorest value rating. Only 44% were initially used, which fell to 36% for complete adoption, and took 9.6 months to develop. Product decisions seem risky because, unlike services, they must be viable in a market



place. This may have prompted the informants to give product decision lower ratings than the other types of decisions. However, such biases seem minimal. The decision value ratings come from people familiar with the decision and not the decision-maker, who may have a vested interest in making his/her product decision seem good.

*Control system and internal operation decisions.* Two types of internal support systems were uncovered that had different purposes. Hickson et al. (1986) limited these internal support systems to what was termed control, such as budgeting, accounting, and planning. These systems stand apart from an organization's products and services and offer ways to monitor what is done or the results produced. Systems involving internal operations support some aspect of product creation or service provision, and also assist with product or service monitoring. Control information and product/service support are often provided simultaneously. Examples include scheduling, data processing, inventory control, and production planning. Hickson et al. (1986) classifies these decisions as either technology or control system types. This seems unwise. For example, production-planning systems have multiple stages that have control and other purposes and incorporate hardware, software, and human operators, creating socio-technical systems. Much of today's re-engineering decisions are carried out to alter these socio-technical systems, seeking to improve cost and quality. Decisions involving internal operations often have significant impact on an organization's future success, so they were considered as a separate decision type.

*Control system decisions* involved devices set in place by management to monitor inputs or outputs. Decisions involving procurement, budgeting, accounting, etc. were observed in 15% of the cases and made up some of the more successful decisions that were examined. Control decisions had 62% initial adoption, a 56% complete adoption, and were very efficient, taking an average of 4.1 months to develop.

Decisions involving *internal operations* were noted in 17% of the cases and were somewhat less successful (58% initial adoption, 47% complete

adoption, and developed in 8.7 months). This decline was attributed to the additional demands put upon internal operations, making it hard to satisfy its multiple purposes. For example, scheduling provides control information such as the volume of finished goods but must also help in the pacing of manufacturing steps.

*Technology decisions.* These decisions involved buildings, equipment, hardware, and software. Such decisions were noted in 17% of the cases and had average rates of adoption (61% and 50%). They produced very good outcomes but took extended periods of time to complete. This extended time stemmed from the complexities of technology decisions, which often involved many people inside and outside of the organization as building plans were finalized or equipment details were specified.

*Marketing decisions.* These decisions involved service and product pricing and niching to stimulate use or sales. Marketing decisions were noted in 5% of the cases. Like technology, marketing decisions had average adoption rates (63% and 50%) but produced fast development and between good and adequate outcomes. The need for rapid action to respond to market pressures may push down development time; which may also lower the quality of marketing decisions.

*Input decisions.* Input decisions involving financing and raw materials were observed in less than 4% of the cases. This low rate of occurrence made it impossible to consider these decisions further in this study.

Although some decision types were more successful than others were, tactic was the primary factor influencing success. This can be shown by comparing variance explained by the tactics used to uncover alternatives with that explained by the decision types in the ANOVAs. The variance explained by tactics is more than twice the variance explained by decision type. This can be verified by comparing the levels of significance for the tactic variable with the significance levels of the decision type variable in Table 5. These findings suggest that the tactic used to uncover alternatives will be a more important determinant of success than the nature of a decision.

#### 4.4. Tactics and decision types

The best and worst way to uncover alternatives for each type of decision is now considered. A one-way ANOVA on each of the columns in Table 7 was carried out to do this analysis. The results suggest a contingency relationship between decision types and tactics used to uncover alternatives. Table 8 summarizes these relationships as prescriptions for practitioners.

*Reorganization decisions.* The first column in Table 7 shows the success realized when each of the tactics was used to uncover alternatives for reorganization decisions. Design was found to be the best way to identify alternatives for reorganization decisions ( $P < 0.05$ ), supporting H4. Design produced 100% initial adoptions, 86% complete adoptions for decisions rated as above “good”. However, these decisions took an average of 18.7 months to develop, an investment that seems justified given the superior outcomes. For instance, a design tactic was used in the Sisters of Mercy case in which the religious order sought to reduce its involvement in their hospitals day-to-day operations. The special requirements of a religious order, which had to be blended with the governance needs of a large modern hospital system, called for alternatives to be customized.

Search and benchmarking produced very poor results when applied to reorganization decisions but were used about 50% more often than the best tactic: design (see Table 6). Search and benchmarking had an adoption rate of 40% and took between 11.4 and 14.0 months for development. These tactics seem to lack both effectiveness and efficiency when applied to re-organization decisions. For example, a Big-10 University hospital contacted the highest rated university hospitals in the Big-10 peer group to learn about their governance procedures. Differences in expectations for research productivity of the medical staff, tertiary health care financing by the state, and hospital financial relationships with the University made the practices of one institution ill-suited for use by another. The project was abandoned when it became apparent that the changes in governance required to make the benchmarked plan work were so exclusive that customized governance

procedures would be required. Search revealed the same pattern. Consultants selling restructuring services frequently offered ideas drawn from an amalgamation of their experiences with their clients. These experiences receive only some small scale fine-tuning for the next client. In both cases, the tailoring that is required to make the plan work proved to be extensive, making it prone to failure. The uniqueness of a reorganization decision makes search and benchmarking an undesirable way to generate alternatives and design the best way to generate alternatives.

*Product decisions.* Alternatives for product decisions were identified using design and idea tactics, in about equal proportions. As postulated by H4, design tactics were more successful than idea tactics ( $P < 0.05$ ). Design had twice the complete adoption rate and produced better results, but took nearly twice as long as the idea tactic. This investment seems to be warranted in all but very short-fuse product decision. For example, a candy company adopted an idea of its CEO to add a re-seal package to the company’s largest selling candy bar. The revised product did not sell well because people were found to consume the product when opened and would not pay extra for a re-seal wrapper. In contrast, Bank One devised a way to increase its Visa sales by re-designing its promotional approach. Innovation paid dividends when applied to this product decision by taking stock of the niche to be exploited and crafting an approach that recognized the needs and expectation of this potential group of customers.

*Service decisions.* Service decisions had the best outcomes when alternatives were uncovered by integrated benchmarking and search ( $P < 0.05$ ), which fails to support H4. Design and idea tactics produced the poorest outcomes. Integrated benchmarking produced 89% initial adoptions, 78% complete adoptions, decisions rated as approaching outstanding, in an average of 8.4 months. For example, a hospital created its open-heart surgery program by visiting several hospitals that were world leaders in this service to determine the parameters of a successful program. Benchmarking with a single institution was observed three times more often than making multiple visits, but the single visit was less successful. Similarly,

search revealed some, but not all aspects of a successful program because only the best providers had pertinent knowledge of what works and why. Design and idea tactics were less useful for the same reasons. These tactics produced fewer adoptions when people inside a service organization lacked the required knowledge and/or skills. The failure of design can also be traced to tradition. Benchmarking the best institutions seems to be a practice widely followed by service institutions, such as hospitals, that predates its use by for-profit firms (Nutt, 1984a,b). New services created by benchmarking can identify innovative, if not radically innovative, ideas. Interestingly, the institutions most frequently benchmarked (the world leaders in a particular service) used design to create their services. This gives some support to H4. Someone must innovate to develop the benchmark for the service decision.

*Technology decisions.* Decisions involving technology prompted an external search for alternatives, supporting H5. Nearly half of the technology decisions used search tactics. Cyclical search applied to technology decisions produced the best results observed in the study ( $P < 0.05$ ). There were 100% initial and complete adoptions rated as good and completed in an average of 7.0 months. The poorest performing approach, the idea tactic, had 30% initial and complete adoptions for decisions regarded as just adequate and taking an average of 12.9 months. The recycled search seemed to produce a superior understanding of available infrastructure and excellent outcomes. For example, Burgess and Niple, an engineering and architecture firm, created a lab to examine toxic materials by using this approach. The company carried out repeated searches to find state of the art equipment and software and reexamined their assumptions about the business potential of the venture by quizzing each new vendor to learn about current and expected developments.

An idea tactic produced poor results for technology decisions, but it was used in 17% of the technology cases. For example, Consolidated Edison revamped its monitoring procedures for peak power usage by using the equipment ideas of a Vice-President. The new equipment proved to be ineffective and Con Ed went back to using the old

equipment in less than 12 months. Careful search seems to be better than the idea tactic because the idea champion may have incomplete knowledge of the technology and its possibilities.

*Control systems.* The best tactic for control system decisions proved difficult to isolate (see second column, Table 7). As predicted, benchmarking was often used for control decisions (see Table 6) but this tactic produced the least successful decisions ( $P < 0.05$ ). Search and idea tactics had more adoptions, design and idea tactics better decisions, and benchmarking was more efficient. It is difficult to conclude that search produces better outcomes because a just adequate decision value rating offsets its higher adoption rate. The low rates of adoptions and low value associated with benchmarking suggest that H3 should be rejected. For example, AT&T adopted a MRP system used by a local company. The MRP system proved to be a poor fit with the company, causing a nearly complete re-design. Integrated benchmarking was observed too infrequently for this decision to make generalizations. One success story may illustrate the merits of this approach and how it can insure a fit to the situation that was missing in the MRP decision. Lennox successfully initiated a recycling program for air conditioner toxic chemicals, such as Freon, by examining the practices of other companies noted for their recycling efforts. Lennox made plant visits that exposed the company's TQM team to organizations dealing with chemical compounds with similar toxic properties as those handled. A composite of these procedures, tailored to local needs, proved to be very effective.

*Personnel decisions.* To test H6, the cases involving benchmarking were examined using the success indicators. The idea tactic had 67% initial adoptions, and 50% complete adoptions for personnel decisions termed good in 7.0 months ( $P < 0.05$ ). Benchmarking had a comparable rate of initial adoptions that fell to 33% for complete adoptions for decisions rated as approaching disappointing in an average of 9.0 months. The idea tactic worked better for personnel decisions and benchmarking had the worst results, which fails to support H6. A reading of these cases suggest that the success of the idea tactic and the failure of

benchmarking can be attributed to the expertise of the Human Resource vice presidents that made the personnel decisions in the cases. Their store of knowledge, acquired over many years with an organization, was drawn on successfully to propose bonus plans and early retirement buyouts. These decisions appear to have been successful because they took into account local conditions and values, whereas the benchmarking approach did not. This is similar to the Vroom and Yetton (1973) “expertise” factor.

*Marketing decisions.* Marketing decisions were difficult to assess because the preferred tactic, idea, had too few observations to examine (see Table 6). As a result H7 could be considered only indirectly by examining the results associated with benchmarking and design. Ready-made ideas (benchmarking) did produce better results than design and its custom-made ideas. Innovations in pricing and targeting products to new customers were less useful than finding good pricing and niching practices to emulate. Benchmarking had two-thirds adoption rate for decisions approaching good results in an average of 4.7 months ( $P < 0.05$ ). Design had 50% adoptions for adequate decisions in 3.7 months. These results can be explained by sector differences. Further examination of the cases revealed that most of the benchmarking market decisions were taken in public organizations in which such information is less sensitive and design harder to carry out. The influence of ideas (or expertise) on market decisions requires more private sector decisions to understand successful practices for this type of decision.

*Internal operations decisions.* This type of decision was not included by the hypotheses because it was not recognized in previous research as a unique decision type. The success indicators show that design tactics produce the best results and idea tactics the worst results for decisions that deal with internal operations ( $P < 0.05$ ). Design had 74% initial adoptions and 58% complete adoptions for decisions rated as above good in an average of 3.9 months. Idea tactics had 47% initial adoptions, which fell to 33% for complete adoptions, for decisions just above adequate in 15.8 months. These differences are some of the most pronounced observed in the study. The decisions suggest some

reasons for these dramatic differences in success. For example, the EPA and OSHA had cited a small company making driveway sealer for a dust problem that was having adverse effects on employees and the environment. Historically, raw material was ordered in 50-pound bags that were dumped in a hopper outside the plant by employees, creating the dust problem. The operation was redesigned by purchasing raw material in enclosed railroad cars and drawing the material from the car to the plant by a vacuum produced in an enclosed chute, eliminating the dust problem and cutting cost. Successful decisions for operations seem to depend on innovation, as the illustration suggests. In other decisions, operations problems were seldom improved by people’s pet ideas. These alternatives tended to call for variations of the current approach that had become associated with poor results.

## 5. Conclusions

Several interesting relationships between tactics and the decision to be made were found in this study. These relationships say little about the politics of decision-making in which people with interests’ square off to protect these interests. There are two possible explanations for the relative absence of politics in this study. First, decision-makers may have found it difficult to disclose decisions with conflict. If so, this could have limited the number of controversial decisions in the database, or even excluded them. Measures of extent of change and initial opposition (not reported here but collected for every decision) suggest that one-third if the decisions conjured up sufficient concern to create conflict. This suggests that the database had a number of controversial decisions.

Second, the findings must be put in a context of the simplifying assumption that was made in which just tactics used to uncover ideas were considered. This assumption stripped away information about how alternatives were evaluated and implemented, which may explain why there was little political maneuvering in which people with something to lose took steps to protect their

interests (Pfeffer, 1992). Conflict often arises as a proposed course of action is evaluated and implemented but is less apt to surface as ideas are being identified. No proposed action was available to prompt disagreement in three-quarters of the decisions that were studied. In the remainder, an idea was discovered early on and no formal search was conducted. These ideas had very low use rates. The resistance to put these ideas to use points to behind-the-scene conflict in which people examined an emerging course of action and concluded that it would not serve their interests or the interests of people they were pledged to represent. For the rest of the decisions in this study, conflict not as likely to emerge because the course of action had yet to be discovered. This would push conflict, should it materialize, into evaluation and implementation activities. The success measures would capture the consequences of this conflict. Thus, conflict may arise more often than the study indicates but its effects have been captured. The prescriptions may seem overly “rational” because dealing with conflict takes place later on in the process. The prescriptions, however, include the impact of political issues imbedded in the decisions because success was measured.

Prescriptions that link tactics used to uncover ideas with the type of decision are summed up in Table 8. These prescriptions call for design tactics to be used for decisions that have unique organization-specific needs, such as restructuring, and for decisions that call for innovation. Design produced much better results than any other tactic for product decisions and for service decisions when radical innovation was called for. Alternatives provided by the other tactics produced less favorable outcomes because they revealed competitive advantage or failed to create one. Integrated benchmarking was widely practiced by service organizations when radical innovation was not required and produced excellent results. Technology decisions had the most success when a search tactic was used to uncover alternatives. Search provided an organization with the opportunity to discover opportunities that merited consideration. The cyclical search tactic produced even better results, the best observed in the study. There were too few cases to test the merits of a cyclical search for all

types of decisions. Several tactics work well for control system decisions. Search and design were more successful than benchmarking and idea tactics in generating control alternatives. The broader search for alternatives associated with these tactics seemed to be associated with better results. Personnel decisions produced the best results when the expertise of human resource leaders was used. The need to incorporate local conditions and limited knowledge of tactics, such as design, may explain this finding. Marketing decisions in which price and niche alternatives were sought were difficult to fully understand, due to their limited numbers. However, a benchmarking tactic appears to be more successful than design. Finding useful practices to emulate was more successful than innovation for niche decisions that seem to cry out for innovation. This result was attributed to a preponderance of public sector marketing cases in the database. Public sector decision-makers have much less capacity to do design and face fewer competitive pressures. This allows a certain openness about pricing and niching in which these organizations divide up clients and share pricing information.

Previous research failed to identify the internal operation decision. These decisions involved socio-technical systems such as production processes that had control purposes, but also helped to create the product or service. For example, physicians draw on treatment procedures, treatment schedules, diagnostic and treatment programs, etc in the course of their work. The hardware and software drawn on to provide a service is also used to monitor what is done. Changes in the internal operations that make up a service are often made to improve quality or lower cost. These decisions called for innovation, making design the best tactic to generate alternatives. This suggests that the design tactic should be a key feature of re-engineering efforts.

Additional work is needed to fully understand the contingency relationship between decision type and decision-making. Additional decision process stages should be considered. Such studies could determine patterns of success that stem from links between decision type and intelligence gathering, direction setting, evaluation, and implementation

and may say more about how politics is played out in a decision process. The motivation to use a particular tactic seems important and may be prompted by who is involved as well as cultural differences, suggesting that multinational studies of decision behavior may be revealing. In addition, decision-maker power and expertise as well as ambiguity, uncertainty, available resources, and institutional rigidity may isolate conditions under which tactics can and can not be used for particular types of decisions. For instance, powerful decision-makers may select tactics that reinforce their power. A particularly important factor may be innovation barriers in which organizations have an explicit or implicit policy of being a “second mover”. The origins of second mover, early adapter, behavior seems to merit attention in decision-making research.

As noted previously, context is important and merits study. For example, non-supportive stakeholders create a negative environment that may result in some tactics being more successful than others. In such situations, decision-makers may select a tactic for its ability to manage stakeholders and care less about the quality of the ideas uncovered (Blair and Boal, 1993). Decision-makers may be motivated to quickly identify alternatives, which would prompt them to use idea and single benchmarking tactics to allay fearful stakeholders. Indicators of decision difficulty could help to understand what decision-makers perceive to be difficult decisions and how a perception of difficulty influences the way alternatives are uncovered, for good or ill. Urgency and importance may also influence the success of tactics used to uncover alternatives. Another limitation can be found in the indicators used to measure success. Key players in a decision may have different views of what is important and devise a way to measure what they want. For instance, in one of the decisions the proponent wanted to cut the delays, errors, and disruption caused by renting warehouse space in several locations. Higher ups were opposed to spending more money on renting warehouse space at a single location, or building a new one. The stakeholders in this decision had different aims that the measures of success used in this study would not capture. Some way to incorporate this

in future work could be enlightening. Such qualifications are important but go beyond what can be accomplished in a single study. To get at the complexity identified by factors describing the decision situation, its context, and the individual decision-maker calls for an even larger database of decisions than the one used in this study.

## References

- Alexander, L. 1986. Successfully implementing strategic decisions. In: Mayon-White (Ed.), *Planning and Managing Change*. Harper & Row, London.
- Boal, K., Bryson, J., 1987. Representing and testing policy implications of planning processes. *Strategic Management Journal* 8, 211–231.
- Bower, J.L., 1972. *Managing the Resource Allocation Process: A Study of Corporate Planning and Investment*. Irwin, Homewood, IL.
- Box, G., Draper, N., 1987. *Response Surface Methodology*. Wiley, New York.
- Bretschneider, S. 1990. Management information systems in public and private organizations. *Public Administration Review* (Sept/Oct), 136–145.
- Bryson, J., Bromiley, P., Jung, Y., 1990. The influence of context and process on project planning success. *Journal of Planning Education* 9 (3), 183–195.
- Bryson, J., Cullen, J.W., 1984. A contingent approach to strategy and tactics in formative and summative evaluations. *Evaluation and Program Planning* 7, 267–290.
- Cohen, M.D., March, J.P., Olsen, J.P., 1976. A garbage can model or organizational choice. *Administrative Science Quarterly* 17, 1–25.
- Coursey, D., Bozeman, B. 1990. Decision-making in public and private organizations. *Public Administration Review* (Sept/Oct), 525–535.
- Cyert, R.M., March, J.G., 1963. *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.
- Daft, D., Weick, K., 1984. Toward a model of organizations as interpretative systems. *Academy of Management Review* 9 (2), 284–295.
- Damanpour, F., Evan, W.M., 1984. Organizational innovation and preference: The problem and organizational lag. *Administrative Science Quarterly* 29, 392–409.
- Dean, J., Sharfman, M., 1995. Does decision process matter: A study of strategic decision-making effectiveness. *Academy of Management Journal* 39 (2), 368–396.
- Drenth, P., Koopman, P., Russ, V., Odar, M., Heller, F., Brown, A., 1979. Participative decision-making: A comparative study. *Industrial Relations* 8 (3), 295–309.
- Eisenhardt, K., Zbarachi, M., 1992. Strategic decision-making. *Strategic Management Journal* 13, 17–37.
- Feldman, M.S., March, J.G., 1981. Information in organizations as signal and symbol. *Administrative Science Quarterly* 26, 171–186.

- Harrison, M., Phillips, B. 1991. Strategic Decision-making. *Research in the Sociology of Organizations*, Vol. 9. JAI Press, Greenwich, CT, pp. 319–358.
- Hart, C., Bogan, A., 1993. *The Baldrige Prize*. McGraw-Hill, New York.
- Hickson, D., Butler, R., Gray, D., Mallory, G., Wilson, D., 1986. *Top Decisions: Strategic Decision-Making in Organizations*. Jossey-Bass, San Francisco, CA.
- Hickson, D., 1987. Decisions made at the top of organizations. *Annual Review of Sociology* 9, 319–358.
- Janis, I.J., 1989. *Crucial Decisions*. Free Press, New York.
- Kobe, D.A., 1983. Problem management: Learning from experience. In: Srivastara, S. (Ed.), *The Executive Mind*. Jossey-Bass, San Francisco, CA, pp. 109–143.
- Lincoln, Y., Guba, E., 1984. *Naturalistic Inquiry*. Sage, Beverly Hills, CA.
- Lippitt, M.F., Mackenzie, K.D., 1976. Authority task problems. *Administrative Science Quarterly* 21 (4), 643–660.
- March, J.G., 1981. Footnotes to organizational change. *Administrative Science Quarterly* 26 (4), 563–577.
- March, J., Olsen, J. 1976. Ambiguity and choice in organizations. *Universitets forlaget, Bergen, Oslo, Tromso*.
- Mintzberg, H., Raisinghani, D., Theoret, A., 1976. The structure of unstructured decision processes. *Administrative Science Quarterly* 21 (2), 246–275.
- Nadler, G., Hibino, S., 1990. *Breakthrough Thinking*. Prima, Rocklin, CA.
- Nutt, P.C., 1999. Surprising but true: Half of the decisions in organizations fail. *Academy of Management Executive* 13 (4), 75–90.
- Nutt, P.C., 1992a. *Managing Planned Change*. Macmillan, New York.
- Nutt, P.C., 1992b. Formulation tactics and the success of decision-making. *Decision Sciences* 23 (5), 519–540.
- Nutt, P.C., 1984a. Types of organizational decision processes. *Administrative Science Quarterly* 29 (3), 414–450.
- Nutt, P.C., 1984b. Planning process Archetypes and their effectiveness. *Decision Sciences* 15 (2), 221–238.
- Nutt, P.C., 1989. *Making Tough Decisions*. Jossey-Bass, San Francisco, CA.
- Pettigrew, A., 1985. *The Awakening Giant: Continuity and Change at ICI*. Blackwell, Oxford.
- Pfeffer, J., 1992. *Managing with Power: Politics and Influence in Organizations*. Harvard University Press, Boston.
- Podsakoff, P., Organ, D., 1986. Self reports in organizational research: Problems and prospects. *Journal of Management* 12 (4), 531–544.
- Ritti, R., Funkhouser, G., 1987. *The Ropes to Skip and the Ropes to Know*. Grid, Columbus, OH.
- Soelberg, P.O. 1967. Unprogrammed decision-making. *Industrial Management Review* Spring, 19–29.
- Starbuck, W.H., 1983. Organizations as action generators. *American Sociological Review* 48, 91–102.
- Vroom, V., Yetton, P.W., 1973. *Leadership and Decision-Making*. University of Pittsburgh Press, Pittsburgh, PA.
- Witte, E., 1972. Field research on complex decision-making process – the phase theory. *International Studies of Management and Organization* 56, 156–182.