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Public Management Decision Making: Effects of Decision Content

One obvious aspect of public management decisions and decision making has largely escaped attention—decision content. We examine the effects of decision content by asking the following questions for budget cutback and information technology decisions: How does content affect the time required for decision making? How does content affect who participates? How does content affect the decision criteria employed? How does content affect the information quality used in the decision-making process and red tape? The results suggest that information technology and budget cutback decisions differ in important ways. For information technology decisions, cost-effectiveness is not a significant criterion, average decision time is much longer, and decisions are generally viewed as permanent and stable. For cutback decisions, cost-effectiveness is a significant criterion, decisions are made much more quickly, and they are viewed as unstable and changeable. Surprisingly, decision content does not appear to affect the number of participants.

Public management scholars "discovered" decision making decades ago, and they have been sufficiently enamored of the topic as to suggest decision making as a central focus for public administration theory and research (Simon 1997; Simon, Smithburg, and Thompson 1950). The attractions of decision making are clear enough. In organizations, decisions are the markers for action and the precursors to accomplishment or failure. Failure, in turn, signals the need for new decisions. Herbert Simon notwithstanding, contemporary students of organizational performance understand that decisions and decision processes are best viewed as one important aspect of performance—a vital Act I, but not the whole show. At least since Pressman and Wildavsky's (1973) studies, we have understood that quality decisions absent quality implementation adds up to dashed hopes. Similarly, contemporary observers understand that an organization's outcomes are decided by the trajectories set down by organizational culture and by the resources available, as well as the organization's niche within its interorganizational legal and economic environment. But even if most researchers agree that decision making is not all, they also agree that it is much.

The field of public management holds no exclusive license to conduct decision-making research. Researchers in business, economics, and particularly, psychology have their own decision-making research traditions. When one considers the rich, multidisciplinary tradition of decision-making research, it is not at all surprising that so many aspects of decision making and decision processes have been investigated. Thus, we know a great deal about such diverse topics as decision framing, participation, performance, and especially risk (Wise and Freitag 2002; Sitkin and Weingart 1995; Sitkin and Pablo 1992).

One obvious aspect of decisions and decision making has largely escaped attention—decision content. Does the content of a decision affect attendant decision processes? From a normative perspective, do different content or issue areas require distinctive decision approaches and pro-

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cesses? Why would so obvious a component of decisions attract relatively little attention? One possibility is that it receives less attention because many decision researchers are interested in generalization. Organizational psychologists, for example, "typically dismiss [decision] content as merely a cover story" (Rettinger and Hastie 2001, 336). Another very different answer is that decision content has not been ignored at all, it has simply been studied "one issue at a time." Those who favor a historical or qualitative approach generally have no interest in comparative analysis of completely different issue domains (Snyder et al. 2003; Paige 1968; Roberts 1988). With historians and many qualitative researchers neglecting generalization, and with empirical researchers largely uninterested in aggregating according to decision content, relatively little is known about the interaction of decision content and decision process.

Another reason for neglecting the comparative study of decision content is a practical one—it presents conceptual and operational difficulties. Organizational researchers find it much easier to measure an organization's size, budgets, personnel, communication, and decision processes than to "count" content. By most conceptions, decision content is a qualitative variable, and it is rendered quantitative only if one is willing to relax some rigor in measurement.

Decision content may have many and diverse effects on decisions, but our focus here is its effects on process. We hypothesize that decision processes and public managers' approaches to decision making vary according to the nature of the content. For example, we expect the content of the decision will determine, in part, the number of participants in the decision, the time required for the decision, and the decision criteria. We test our hypotheses using questionnaire data obtained from public managers in state government agencies.

Any public management researcher focusing on decision content has an essentially unlimited choice set. Our study focuses on two broad content areas—decisions about *cutbacks in resources* and decisions about acquiring and managing *information technology and services*. While there are many possible choices of content, we feel these two content domains provide a useful comparison. In the first place, these two decision content areas are currently important ones, at least in the minds of state government managers. In our questionnaire, we asked state government managers to choose one important and recent decision to report on, and these two content areas were among the most often reported. State government administration is now rife with cutback-related decisions, and we expect these decisions to be distinctive and perhaps deleterious in some respects. Information technology decisions provide a useful comparison not only because the content seems quite different, but also because many such decisions involve procurement and imply expansion and advancement more often than contraction and diminishment of services.

We do not suggest the two content areas are in some sense the most important, and we recognize the prevalence of a particular decision content will vary greatly over time. Nevertheless, we feel these two content domains are important ones now and will remain important, even if relatively less so at various points in time.

A second reason we focus on these two decision content domains is that we feel that one content domain, information technology, tends to be somewhat more technical than political, while the other, cutbacks, tends to be more political than technical. Much of the decision literature distinguishes the technical and political aspects of organizational decision-making processes (Allison 1971; Lindblom 1959; Pfeffer 1981; Thompson 1967). Almost all of the relevant work is theoretical, with few, if any, empirical studies directly comparing decisions with technical and political content. By focusing on the information technology and cutback content domains, we hope to provide some comparison between political and technical decision content while recognizing that our content domains are varied and robust. We readily acknowledge there is almost always some political content in public management decisions regarding information technology and, likewise, cutback decisions may contain technical elements. However, we feel that, on balance, information technology decisions are likely to have a larger element of technical desiderata, whereas cutback decisions are likely to be somewhat more dominated by political considerations. To put it another way, few decisions in public management can be said to be apolitical—the question, rather, is the extent to which nonpolitical factors play a role.

Decision Content and the Decision-Making Literature

We do not suggest that comparative analysis of decision content is entirely neglected (see especially Hickson et al. 1986). The few available studies show that approaches to organizational decisions often vary considerably according to the decision content, at least when the decisions are about strategic issues (Ashmos and McDaniel 1991; Dutton and Webster 1988). Laboratory experiment is the preferred method of many researchers who study decision content. Experiment-based studies show that decision content accounts in part for decision makers' choice of either a quantitative approach or a narrative schema (Goldstein and Weber 1995), their choice of information medium used as a decision aid (Dutton, Danziger, and Kraemer 1980), and their choice of decision-making criteria (Brown, Braskamp, and Newman 1978). Decision content also interacts with the legal status of organizations, having a different impact

for public organizations than for private ones (Coursey and Bozeman 1990; Kingsley and Reed 1991; Kingsley 1997; Nutt 1999).

The decision-making literature has paid relatively little attention to specific decision content; much more attention has been given to political and technical decision making (albeit with almost no direct empirical comparison). While the cutback and information technology content domains are not ideal embodiments of "political" and "technical" content, respectively, there is sufficient correspondence that the literature may be useful for suggesting analytical strategies and hypotheses.

What does decision-making theory tell us about classifying decisions according to content? The short answer is very little of direct relevance. However, we can profitably use advancements in decision theory to consider the classification of decisions. In a review of different models of organizational decision making, Pfeffer (1981) classifies organizational decision processes into four categories: rational, bureaucratic, organized anarchy, and political power. These models differ along a number of dimensions, a key one being the ideology that underpins each—compared with an emphasis on advancing efficiency and effectiveness in rational decision making, the political model emphasizes conflict and struggle (Pfeffer 1981). The focus on efficiency and effectiveness in the rational model is akin to our understanding of technical decisions, where there is little controversy about the ends (though much controversy may remain about means). On the other hand, in the political model of decision process there is considerable disagreement about the ends or at the very least the ordering of ends. The question, then, is what determines the level of conflict and struggle in specific decision-making situations. There are three possible explanations: (1) the conflict in a specific decision-making situation is derived from broader organizational and environmental contingencies; (2) specific decision content is the major determinant of level of conflict; and (3) a combination of broader context and specific decision content.

We believe that specific decision content is a key determinant of decision process, an idea that finds support among scholars attempting to arrive at a contingency framework for decision-making models. Daft (1989) proposes a contingency framework that is based on two key dimensions, namely, goal consensus and technical knowledge (dimensions originally identified by Thompson [1967]). According to Daft, a rational or "management science" approach is ideal under conditions of high goal consensus and high technical knowledge. In contrast, situations of low goal consensus and low technical knowledge are better suited for nontechnical decision processes (Keller and Ho 1988; Gigerenzer and Goldstein 1996). But what determines goal consensus and technical knowledge—are they completely exogenous to a specific decision-making situation? We believe decision content is a key underlying factor. When decision content is purely technical, one would expect both high goal consensus and a high level of technical knowledge. Most decisions, however, are likely to have a significant political component.

It is perhaps best to think of decision content as a mix of technical and political content, with the pure technical content as an anchor at one end and pure political content at the other. Decision content determines who gets to participate and what kind of standing they have with respect to the decision-making process. When there are multiple participants and participants are drawn from both inside and outside the organization, one can expect this to lead to conflict and lowering of goal consensus. It must, however, be noted that decisions involving participants from different parts of a very large organization can also lead to diminishment of goal consensus (Narayanan and Fahey 1982).

We conclude, then, that it is never easy to distinguish political from technical content. Most public-sector decisions are political decisions, it is only the degree and type of politics that vary. Moreover, characterizing the content of decisions is even more complicated than just teasing out political and technical content. If there is anything we know from intensive case studies of particular decisions, it is that all complex decisions are multidimensional and, just as important, few decisions are discrete in the sense that the researcher can easily put boundaries around them with respect to time and effects. Nonetheless, decisions and decision making are sufficiently important to human action that it is perhaps useful to plunge ahead with approximate measures even while we recognize that analytical frameworks and quantitative studies can never capture important aspects of decisions.

Research Questions and Hypotheses

Ours is a study of the effects of decision content on the decision process. One way of organizing thought about this topic is to pose a few simple questions:

- How does content affect the decision criteria employed?
- How does content affect the time required for decision making?
- How does content affect who participates?
- How does content affect the information quality used in the decision-making process and amount of red tape?

Decision Criteria

We examine four familiar decision criteria: cost-effectiveness, technical feasibility, fairness, and usefulness. With respect to cost-effectiveness, we expect that both cutback and information technology decisions will tend to empha-

size this criterion. Cutbacks are usually premised on a need to do more with less. Information technology is generally viewed as a means of enhancing productivity and cost-effectiveness. Even when the result does not match the promise, cost-effectiveness is among the rationales employed.

The hypotheses for the technical feasibility criterion require little imagination. Research on the politics of computing (Kraemer and Dutton 1979) reminds us that information technology decisions are not entirely about technical feasibility and performance, but it seems likely that technical feasibility is generally an important consideration. In the case of cutbacks, technical feasibility rarely seems to be a prominent issue. It may be incredibly difficult to cut budgets, but not because of technical infeasibility.

Most of the literature on cutback management has emphasized the use of fairness norms entailing "sharing the pain" (Levine 1978). Thus, we expect that fairness will be an especially important criterion for cutback decisions. While fairness may be important in information technology decisions, the information technology literature rarely mentions fairness as a major consideration. Certainly there is an emphasis on the end user, but this is not the same as fairness.

Usefulness is an interesting criterion with respect to cutback decisions. It is probably important to remember that our data are from public managers. We expect public managers to view cutbacks as either reprehensible or as necessary, but they are not likely to view them as useful. Other actors, especially conservative politicians, might view agency cutbacks as extremely useful to their agenda of reduced government, but it is unlikely that many public managers share this view and unlikely that usefulness will be cited as an important criterion for their cutback decisions. By contrast, there are few areas of public management so driven by utility as information technology. We expect that usefulness will be an especially important criterion for information technology decisions.

To summarize:

> **H1:** Cutback decisions will tend to be based on the criteria of cost-effectiveness and fairness; information technology decisions will tend to be based on the criteria of cost-effectiveness, technical feasibility, and usefulness.

Decision Time

Under the category of decision time, we examine four factors. In the first place, the decision time required pertains to the amount of time elapsed from the point at which an issue appears on the agenda to the time the decision is made. We also consider the extent to which the decision is viewed as permanent and the extent to which decision is perceived as stable over time versus variable. Finally, we consider the number of interruptions in the decision-making process.

Regarding the time required to make decisions, we expect that cutback decisions will take less time than most major decisions, simply because the motivation generally comes from a higher authority, either a legislative mandate or an executive superior. In most cases, requirements for cutbacks are also accompanied by a deadline for making it happen. In the case of information technology decisions, we expect these will take more time than most important decisions. In the first place, information technology decisions often involve procurement and often procurement challenges. When multiple vendors are involved, decisions often take longer. Just as important, information technology often plays an integrating role or, even when that is not the case, creates multiple dependencies. For this reason as well, we expect information technology decisions to take longer.

Regarding the perceived permanence of the decision, we expect that cutback decisions will be viewed as temporary. In part, this expectation is because budget vicissitudes are common phenomena, especially in state government, and cutbacks are often reversed, sometimes quickly. Just as important, public managers' perceptions of the temporariness of budget cuts may relate as much to human nature as to fiscal conditions. Because agency functions depend on funding and because most public managers are invested in their work, it is only natural that they would be somewhat optimistic, at least during the first couple of rounds of budget cutting. This may be the case especially for veteran public managers who have seen periods of scarcity and periods of plenty and who expect such cycles.

Overall, we expect no significant relationship between perceived permanence and information technology decisions, in part because of competing factors. On the one hand, decisions are likely to be permanent because of the importance of an installed base and the up-front investment for information technology. On the other hand, information technology has a shelf life and an obsolescence rate. In that sense, information technology decisions are never permanent.

Related to perceptions of permanence is the relative stability or variability of decisions. We expect cutback decisions to be unstable for many of the same reasons they are viewed as temporary. We hypothesize that information technology decisions, likewise, will be viewed as unstable because the implementation of information technology often requires constant modification as the systems or software come on line.

Finally, we consider the number of interruptions in the decision process. We hypothesize that cutback decisions have fewer interruptions. Cutback decisions are often made under time pressure and on short deadlines, and thus there

are fewer interruptions: There is simply less time to interrupt. By contrast, we hypothesize that information technology decisions are likely to experience many interruptions because these decisions often deal with procurement and multiple or competing vendors.

To summarize:

> **H2:** Cutback decisions require less time, and they are more likely to be viewed as temporary and more unstable. Cutback decisions experience fewer interruptions. Information technology decisions require more time, are unstable, and experience more interruptions.

Decision Participants

In considering decision participation, we examine the number of participants inside the agency, the number outside, the total number, and the percentage of external participants. We expect that cutback decisions will have a higher number of internal participants, a higher number of external participants, and therefore a higher number of total participants. This expectancy of higher levels of participation relates to the idea that cutback decisions generally affect most aspects of agency operations and often directly affect clients. Because cutback decisions generally come from political superiors, one expects that this factor, too, will add to the number of participants. Likewise, we expect that cutback decisions will have a higher percentage of external participants.

The situation is quite different with information technology decisions. We expect the greater technical expertise required for information technology decisions to suppress the number of participants, both internal and external. While we expect a lower number of internal participants, we expect the ratio (if not the absolute number) of external participants will be higher because of the important role of vendors and end users, as well as procurement officers.

To summarize:

> **H3:** Cutback decisions include more internal and more external participants, as well as a higher percentage of external participants. Information technology decisions include fewer internal and total participants.

Information Quality and Red Tape

We hypothesize that information quality will be lower for cutback decisions, not only because of the likelihood of multiple agendas, but also because decisions are heavily constrained, sometimes with many decision elements mandated. By contrast, we hypothesize that information quality will be higher in information technology decisions because the degree of satisfaction with decision outcomes is generally highly dependent on the quality of information.

When we speak of red tape in this context, we are concerned with the amount of red tape experienced during the decision process rather than the red tape entailed in the implementation of the decision. Implementation red tape has been examined by a number of researchers (Bozeman 1993, 2000; Bozeman, Reed, and Scott 1992; Bozeman and Scott 1996; Pandey 1995; Pandey and Bretschneider 1997; Pandey and Kingsley 2000; Pandey and Welch forthcoming; Pandey and Scott 2002). By contrast, decision-making red tape has received little attention. We hypothesize that cutback decisions will experience relatively little red tape in decision making because relatively few standard procedures or controls will be entailed in such decisions, and thus there are fewer opportunities for red tape if we define red tape as "rules, regulations and procedures that have a compliance cost but do not achieve organizational goals" (Bozeman 2000). We expect that information technology decisions will entail relatively high levels of red tape because they are standard decisions made within a thicket of procurement rules and procedures.

To summarize:

> **H4:** Cutback decisions have lower quality of information and lower levels of decision red tape. Information technology decisions have higher-quality information and higher levels of red tape.

Table 1 summarizes our hypotheses, by category, for both cutback and information technology decisions.

Data and Methods

The data for this study were collected during Phase II of the National Administrative Studies Project (NASP-II). The theoretical population of interest for this study comprised managers engaged in information management activities working in state-level primary health and human service agencies. Primary health and human services agencies were identified according to the definition used by American Public Human Services Association (APHSA) and include agencies housing programs related to Medicaid, Temporary Assistance to Needy Families (TANF), and child welfare. Information management was broadly defined to include a range of key managerial roles such as the top program administrator, managers of information system applications, managers in charge of evaluation and research, and managers dealing with public information and communication. The sampling frame was developed with the aid of the most widely used directory of human services agency managers (APHSA 2001). Application of study criteria resulted in a sampling frame made up of 570 managers from the 50 states and Washington, DC. Given the small size of the sampling frame, a decision was made to administer the survey to the entire sampling frame (that is, to conduct a census).

Table 1 Summary of Hypotheses

Decision content	Decision criteria	Decision time	Decision participants	Information quality and red tape
Cutback	1. Cost-effectiveness (+) 2. Technical feasibility (n.s.) 3. Fairness (+) 4. Usefulness (−)	1. Amount of time required for decision (−) 2. Permanence (−) 3. Stability (−) 4. Interruptions (−)	1. Total participants (+) 2. Total internal participants (+) 3. Total external participants (+) 4. External participants as a percentage of total employees (+)	1. Information quality (−) 2. Red tape (−)
Information technology	1. Cost-effectiveness (+) 2. Technical feasibility (+) 3. Fairness (n.s.) 4. Usefulness (+)	1. Amount of time required for decision (+) 2. Permanence (n.s.) 3. Stability (−) 4. Interruptions (+)	1. Total participants (−) 2. Total internal participants (−) 3. Total external participants (n.s.) 4. External participants as a percentage of total employees (+)	1. Information quality (+) 2. Red tape (+)

Key:
(+) = Hypothesized to be positively related to decision content type
(−) = Hypothesized to be negatively related to decision content type
(n.s.) = No significant relationship hypothesized

The study protocol was reviewed and approved by the Institutional Review Board of Rutgers University. Every effort, within reason, was made to encourage managers in the sampling frame to complete the survey. However, with each contact respondents were advised about the voluntary nature of the study and were reminded that they were free to decline participation. Consistent with best practices in survey research, no follow-up efforts were directed at those managers indicating a wish not to participate in the study (Dillman 2000).

As with most survey research projects, minimizing nonresponse, both to the survey and to specific questionnaire items, was a primary goal in the survey administration. Dillman's (2000) comprehensive tailored-design method approach to maximizing the response rate made up of the following elements was employed in the study:

1. A questionnaire with well-designed content
2. Survey questionnaire formatted in accordance with the latest advances in cognitive research
3. Multiple personalized contacts, each contact accompanied with a carefully crafted message to encourage the respondent to complete the survey questionnaire
4. Use of real stamps on return envelopes
5. Use of features such as pre-notice letter, fax message, and phone call at key points in the survey administration
6. Use of special delivery (combination of two-day delivery by Airborne Express and Priority Mail service of the U.S. Postal Service).

The data-collection phase of the study began in fall of 2002 and concluded in winter of 2003. First, respondents were sent a pre-notice letter informing them about the study and requesting their cooperation in completing a questionnaire to be mailed later. Approximately a week after the initial alert letter, the survey questionnaire was mailed to the respondents. The cover letter accompanying the survey questionnaire outlined the study objectives, indicated the voluntary nature of the study, requested participation, and provided contact details of the project director for further informational needs and clarifications. About 10 days later, a combination thank you and reminder postcard was sent to all respondents, thanking those who had responded and encouraging those who had not to respond as soon as they possibly could. Nearly a month after the mailing of this postcard, a new cover letter and replacement survey was sent to nonrespondents. The cover letter emphasized that it was important for everyone to respond (unless for some reason the respondent chose not to respond). In order to make sure the respondents were aware of the second mailing, concomitantly with the mailing we faxed the cover letter that went with the second mailing to the nonrespondents, clearly indicating that the letter and a replacement survey were in the mail. The final step in survey administration took place about two months later when nonrespondents were sent a new cover letter and a second replacement survey with a request to complete the survey. This final mailing pointed out this would be the last opportunity for the respondents to complete the survey questionnaire and used a combination of two-day delivery by an express carrier and U.S. Postal Service Priority Mail.

Based on information cumulated during this period, the size of the sampling frame was reduced from 570 to 518. It should be noted that APHSA directory is the best available source of information on the sampling frame. Despite the best efforts of the APHSA directory to provide current and up-to-date information, the information in the directory at publication time is a year old. The survey was administered several months after the publication of the directory. This was reflected in the principal reason for deletion from the sampling frame: managers having left the organization before the survey administration efforts commenced. Other reasons for deletion from the sampling frame were retirement and death. By the time survey ad-

ministration concluded in winter of 2003, a total of 274 responses were received. Thus, the response rate for the study was approximately 53 percent. Of the 274 respondents, 247 completed the section on decision making. Managers identified and provided details on a variety of organizational decisions, including decisions related to budget cutbacks, information systems, cost-containment initiatives, program design, and reorganization. Of the 247 decisions, 48 related to budget cutbacks and 33 to information technology. The appendix provides details on questions used to operationalize study variables.

Table 2 Descriptive Statistics of Study Variables

Variable	Mean for all decisions	Standard deviation	Mean for cutback decision*	Mean for IT decision*
Cutback decision	0.18	0.38		
Information technology decision	0.12	0.33		
Cost-effectiveness	5.73	1.60	**6.35**	**6.18**
Fairness	5.13	1.66	4.94	5.06
Technical feasibility	5.52	1.50	5.56	**6.52**
Usefulness	5.98	1.30	**5.35**	**6.52**
Decision time (in months)	7.02	8.63	**4.06**	**10.47**
Decision permanence	6.15	2.09	**5.42**	**6.90**
Decision stability	4.96	2.25	**3.56**	**5.87**
Interruptions in decision process	1.46	0.68	1.67	1.48
Total participants in decision	33.15	47.20	41.09	40.65
Internal participants in decision	16.73	13.93	20.06	14.97
External participants in decision	16.52	40.74	21.40	25.55
Percent external participants	0.30	0.26	0.28	0.28
Information quality	2.32	0.66	**2.13**	2.42
Decision red tape	5.63	2.81	6.42	6.48

*Boldface indicates significant difference as compared with other decisions at 0.05 or higher level.

Findings

We present the findings in four stages. First, we provide descriptive statistics. We then provide zero-order correlations for the two dependent variables, cutback and information technology decision content, with each of the decision-process variables. Next, we use multiple partial correlations to control for potentially confounding effects. During this stage we introduce two control variables, organizational hierarchy and organizational size (total employees). We use partial correlation rather than multiple regression because we are working with just two dependent variables (the decision content variables) and determining their relationship with several independent variables. Partial correlation has the advantage of permitting statistical control but does not require multiple models, one for each dependent variable. Finally, in response to a reviewer's concern about the limitations of sequential partial correlation, we present the results of discriminant analysis, which affords simultaneous consideration of the full set of predictor variables.

Descriptive Statistics

Table 2 provides descriptive statistics for all of the study variables. In addition to means and standard deviations for all decisions combined, we present means for cutback and information technology decisions. For cutback and information technology decision content, we also indicate whether the means are significantly different as compared with all other decisions combined. As requested by a reviewer, we also report the full bivariate correlation matrix showing intercorrelations between all of the independent variables in table 3. While there are several moderately strong bivariate correlations, the overall pattern of correlations does not give rise to multicol-linearity concerns.

Correlation and Partial Correlation Results

Tables 4 and 5 provide the results for the correlation and partial-correlation analyses for the cutback decision content variable and information technology decision content variable.

Hypothesis 1

Hypothesis 1 pertains to the effects of decision content on decision criteria, suggesting that cutbacks will be based

Table 3 Correlation Matrix for Independent Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Cost-effectiveness											
2. Fairness	.15*										
3. Technical feasibility	.38**	.24**									
4. Usefulness	.11	.37**	.41**								
5. Decision time (in months)	.11	−.12	.11	.08							
6. Decision permanence	.14*	−.03	.09	.10	.20**						
7. Decision stability	.09	.11	.17**	.31**	.08	.46**					
8. Interruptions in decision process	.03	−.06	−.02	−.15*	.33**	.02	−.15*				
9. Internal participants in decision process	.12	−.02	.11	−.00	.17**	.06	−.12	.23**			
10. External participants in decision process	.14*	.09	.02	.05	.13*	−.03	.009	.15*	.31**		
11. Information quality	.04	.28**	.09	.26**	−.19**	.12	.21**	−.38**	−.14*	.02	
12. Decision red tape	.25**	−.08	.19**	−.002	.30**	−.01	−.05	.45**	.14*	.07	−.2**

* Correlation is significant at the 0.05 level (two-tailed); ** Correlation is significant at the 0.01 level (two-tailed).

Table 4 Zero-Order Correlations for the Two Decision Types

Variable	Cutback decision content	Significance level	Information technology decision content	Significance level
Cost-effectiveness	.191	.003	.111	.083
Fairness	−.056	.382	−.015	.810
Technical feasibility	.014	.829	.262	<.0001
Usefulness	−.238	.000	.161	.012
Decision time (in months)	−.170	.008	.156	.015
Decision permanence	−.172	.009	.140	.032
Decision stability	−.306	<.0001	.159	.015
Interruptions in decision process	.149	.021	.013	.842
Total participants in decision	.083	.209	.063	.343
Internal participants in decision	.119	.064	−.050	.437
External participants in decision	.059	.372	.087	.186
Percent external participants	−.045	.492	−.031	.639
Information quality	−.144	.025	.064	.319
Decision red tape	.139	.030	.121	.060

Table 5 Multiple Partial Correlations (Controlling for Hierarchy and Size)

Variable	Cutback decision content	Significance level	Information technology decision content	Significance level
Cost-effectiveness	.194	.005	.129	.067
Fairness	−.058	.413	−.022	.757
Technical feasibility	.022	.753	.278	<.0001
Usefulness	−.259	.000	.184	.009
Decision time (in months)	−.177	.011	.156	.026
Decision permanence	−.185	.008	.146	.038
Decision stability	−.290	<.0001	.165	.018
Interruptions in decision process	.135	.054	.024	.735
Total participants in decision	.047	.503	.078	.265
Internal participants in decision	.118	.092	−.043	.541
External participants in decision	.014	.331	.105	.133
Percent external participants	−.068	.492	−.014	.843
Information quality	−.164	.019	.055	.435
Decision red tape	.147	.037	.131	.062

on cost-effectiveness and fairness and unlikely to be based on usefulness; information technology decisions will likewise be based on cost-effectiveness, but technical feasibility and usefulness will be other major criteria.

Examining the zero-order correlation tables, we see the results comport reasonably well with expectations. For cutback decisions, cost-effectiveness is significantly associated with the decision type (0.191, $p < .003$) and, as expected, usefulness is also correlated significantly and in the expected negative direction (–0.238, $p < .000$). However, the fairness decision criterion is not significant, that is, it is no more or less likely to be applied in cutback decisions than in all other types of decisions. With respect to information technology decisions, technical feasibility (0.262, $p < .0001$) and usefulness (0.161, $p < .012$) were especially important criteria for information technology decisions—as hypothesized—but the cost-effectiveness criterion was not significantly associated with information technology decision content.

When we examine the partial correlations, controlling for hierarchy and organization size, we see no change in pattern but some change in magnitude. For example, the cost-effectiveness criterion approaches an acceptable significance level for information technology decisions, suggesting that size and hierarchy are intertwined with information technology decisions, perhaps suppressing the statistical effect in the zero-order correlation. But the basic conclusion is that the findings for the zero-order correlation hold.

Hypothesis 2

Hypothesis 2 deals with aspects of time in the decision process. Expectations under hypothesis 2 are that the cutback decisions take less time, are less likely to be viewed as permanent, are less likely to be stable, and experience fewer interruptions. For information technology decisions, the hypothesis suggests that more time will be required, that such decisions are less likely to be stable, and that there will be more interruptions than with other types of decisions. Examining the zero-order correlations for the cutback decisions, the findings support the expectations about the amount of time required. Cutback decisions require less time (–0.170, $p < .008$). With regard to the interruptions experienced during the decision-making process, the hypothesized relationship for cutbacks is significant but in the opposite direction as expected—these decisions have *more* interruptions (0.149, $p < .020$). This finding is especially interesting inasmuch as our expectation was based on a shorter decision time for cutback decisions. This implies that even with a shorter decision time, cutback decisions experience more interruptions than other decision types (mean = 4.1 months for cutback decisions, 7.7 months for all other types). The picture, then, is of a brief but volatile process, and this picture is brought into relief by the findings that cutback decisions are much less likely to be stable (–0.306, $p < .0001$) and less likely to be viewed as permanent (–0.172, $p < .009$).

For information technology decisions, more time is required (0.156, $p < .015$) than for other decision types, as hypothesized. We expected that information technology decisions would entail more interruptions, but the number of interruptions was not statistically significant, indicating that information technology decisions are no more or less likely than others to have interruptions. We expected that information technology decisions would not be viewed as

permanent, but, in fact, the relationship is positive (0.140, $p < .032$), suggesting that information technology decisions are viewed as permanent more often than other types of decisions. The hypothesis for instability was not borne out, and, indeed, information technology decisions seem *more* likely to be stable (0.159, $p < .015$).

Examining the results of the partial-correlation analysis, we see the controls reduce the magnitude of the relationship between cutback decision content and number of interruptions, bringing it somewhat below the 0.05 significance threshold. This implies that larger and more hierarchical organizations are likely to experience more interruptions, perhaps mitigating any effect from decision content. Findings for other relationships are not much altered, at least not so much as to have bearing on significance.

Hypothesis 3

Hypothesis 3 is the "participation hypothesis." Our expectations were that cutback decisions would involve more total participants, more internal participants, more external participants, and a higher percentage of external participants. We hypothesized that information technology decisions would involve fewer internal and total participants, but a higher percentage of external participants.

The correlation findings show that decision content has virtually no bearing on the number of participants. None of the participation variables is significantly associated with either of the decision content variables. This is not because there is no variance in the number of participants; it is simply that decision content does not seem to be a primary driver of participation. Controlling for the organization's hierarchy and size does not substantially change the relationship of participation variables to decision content.

Hypothesis 4

Hypothesis 4 pertains to information quality and decision-making red tape. We hypothesized that cutback decisions would have poor information quality and less red tape and that information technology decisions would have better information quality and more red tape.

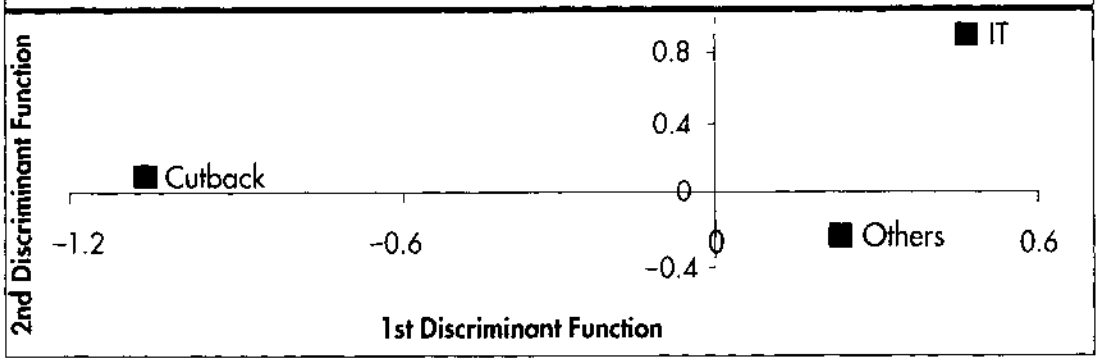
The findings from the zero-order correlations provide mixed support for our expectations about cutback decisions, indicating more rather than less red tape (0.139, $p < .030$) and lower-quality information (–0.144, $p < .025$). Information technology decisions, however, are not significantly related to either, though red tape is near the 0.05 threshold (0.121, $p < .060$) and in the expected direction. The partial correlation gives a slight increase in the magnitude for the relationship of the two predictor variables with cutback decision content, but it does not otherwise alter the findings from the zero-order correlation.

Discriminant Analysis (Simultaneous Consideration of the Full Set of Predictors)

While sequential consideration of hypotheses is useful, it does not indicate the extent to which the set of predictors (in individual hypotheses), taken together, distinguish cutback decisions from information technology decisions. Discriminant function analysis is an ideal technique for this purpose because its principal goal is to "predict group membership from a set of predictors" (Tabachnik and Fidell 2001, 456). We created a categorical dependent variable that classified decisions into one of three groups: cutback decision content, information technology decision content, and other decision content. The residual "other" category comprises all reported decisions other than cutback or information technology decisions. As pointed out earlier, the residual category is quite diverse. For predictor variables, we considered 12 variables from among the 14 specified in hypotheses (see table 2 for a list of all variables). Of the four variables relating to participation in the decision-making process, only two (the number of internal and external participants) were retained for discriminant function analysis. Given our theoretical interest in the impact of each predictor variable, we employed direct discrimination function analysis (as opposed to stepwise) in which all 12 predictors were entered together in the analysis.

Two canonical discriminant functions were calculated, the first with a Chi-square value of 79.51 and the second with 27.61 ($p < .0001$ and $p < .004$, respectively); these two functions account for 67 percent and 33 percent of the between-group variability, respectively. The first discriminant function maximally delineates cutback decision content from information technology and other decision content (figure 1). The second discriminant func-

Figure 1 Plot of Group Centroids on Two Discriminant Functions Derived from 12 Predictor Variables



tion discriminates information technology from other decision content.

The structure matrix of correlations between predictors and discriminant functions suggests the best predictors for distinguishing cutback decisions from the other two groups are, in decreasing order of importance, decision stability, usefulness, decision permanence, decision time, information quality, interruptions in the decision process, and number of internal participants. Among these predictors, however, decision stability and usefulness have loadings in excess of 0.50 and are considerably more influential than the others. The best predictors for distinguishing between information technology and other decision content are, in decreasing order of importance, technical feasibility, cost-effectiveness, decision red tape, number of external participants, and fairness. The strongest predictor in this case is technical feasibility, with a loading of 0.75, followed by cost-effectiveness and decision red tape, both of which have loadings of approximately 0.5.

Table 6 Structure Matrix for Discriminant Analysis

	Discriminant function 1	2
Decision stability	.585(*)	.172
Usefulness	.532(*)	.238
Decision permanence	.379(*)	.209
Decision time	.366(*)	.249
Information quality	.301(*)	−.013
Interruptions in decision process	−.213(*)	.179
Internal participants in decision	−.212(*)	−.004
Technical feasibility	.055	.747(*)
Cost-effectiveness	−.302	.514(*)
Decision red tape	−.189	.451(*)
External participants in decision	.008	.289(*)
Fairness	.103	−.116(*)

Pooled within-group correlations between discriminating variables and standardized canonical.
*Largest absolute correlation between each variable and any discriminant function.

Overall, the discriminant analysis provides strong support for the ability of predictor variables to delineate decisions based on decision content, providing a clear separation of cutback and information technology decisions from each other and from other types of decisions. In addition, the discriminant results on the influence of individual predictor variables on decision content reinforce the results of the bivariate analysis.

Conclusion

Perhaps the most important conclusion from our study is that decision content determines the subsequent process. This is because content has a significant influence on decision criteria, decision time and flow, information quality, and red tape. Much of the extant literature assumes that decision processes are determined completely and principally by organizational and environmental contingencies. Our study offers a counterpoint highlighting the importance of decision content. Indeed, differences in decision content may give rise to quite different decision processes, even after controlling for organizational and environmental contingencies.

The results of the discriminant analysis seem particularly persuasive insofar as the two decision content domains are, in this approach, compared to all of the decision content domains reported by our respondents, a highly diverse set of decision domains. While the entire sample of decisions cannot be viewed as representative of all public management decisions—or even all state public manager decisions—at a minimum they provide a diverse set for comparison. The results show that both cutback and information technology respond to a distinctive set of decision drivers. In the case of cutbacks, the processes were especially unstable, including many interruptions, and usefulness had a negative and statistically significant relationship. While information technology decision drivers were not entirely different, some particularly distinctive features included the relevance of technical feasibility concerns and cost-effectiveness and, interestingly, the prevalence of red tape in decision making. We feel this set of findings provides a good justification for the strategy of examining decision content as an avenue of knowledge for understanding decision making and decision processes.

An especially interesting "nonfinding" is that decision content seems to have little bearing on participation variables. The participation variables are certainly not random, they just are not well accounted for by decision type. Perhaps such factors as the organization's culture, the rules and regulations under which it labors, and particular characteristics of the organization's leadership are more influential in determining participation.

The area in which decision content seems most relevant, however, is in factors related to decision time and temporality. The amount of time required for decisions, the stability of the decision process, the number of interruptions, and the perceived permanence of decisions are all accounted for by decision content, though not always in the ways we expected.

With respect to the findings presented here, their utility for public management decision making depends in part on one's conception of what is valuable and what counts as an improvement, and on one's ability to use relatively general findings for specific cases. Nonetheless, we can offer some preliminary thoughts on ways these results can inform public decisions. While cost-effectiveness is the dominant criterion in cutback decisions, political decisions cannot overlook equity and fairness concerns. Therefore, the nonfinding of an association between cutback and fairness is surprising. A closer scrutiny of this surprising nonfinding, taking into account other findings such as the

short time frame and poor information quality, leads to a better understanding. It would be naive to infer that decision makers care little about equity considerations. It is more reasonable to attribute the disproportionately greater attention to cost-effectiveness (at a detriment to equity) to factors such as insufficient time and resources devoted to developing information combined with the rush to complete the decision expeditiously. What does this mean for decision-making processes with respect to budget cutbacks? Given the cyclical and somewhat unpredictable nature of budget surpluses and deficits, planning for cutback decisions should be part of every annual budget cycle. This will ensure ready availability of quality information and may, therefore, afford due consideration of fairness when cutback decisions are made.

Information technology decisions differ from political decisions in important ways—cost-effectiveness is not a significant criterion, average decision time is much longer (nearly a year), and decisions are generally viewed as permanent and stable. Given the complexity of business processes and the scale and scope of various information systems, the extended time for information technology decision making is not without justification. Information technology provides support for key organizational operations and transactions, functions for which permanence and stability is a plus. However, it is worth noting that the one-year average decision time is taken just for making decisions and not for implementing new systems or overhauling old ones. It may be worthwhile to compare the time frame for technical decisions in the public sector with comparable decisions in the private sector. While constraints unique to the public sector may limit the applicability of private-sector benchmarks to the public sector, they can nonetheless provide important markers. The emphasis on permanence, stability, and deliberateness in slow-paced information technology decisions may relegate public organizations to obsolete technology and perhaps deprive them of significant operational and fiscal benefits that may come with the latest technology.

Stepping back from the detail of our findings, we note that despite the fact that some of our findings may have relevance for public management decision making, our study is chiefly concerned with broader, theoretical issues in decision making and decision content. If there is an overall lesson, it is that public managers may wish to give strong consideration to developing decision processes that fit the decision at hand rather than developing very general strategies tailored to most any decision context. Lessons that are more specific depend on future research. With further developments in research, it may be possible to suggest to the public manager exactly which types of decision content are likely to be associated with which features of decision making. At some point, research may advance sufficiently that it will be possible to develop a contingency theory of decision making, with middle-range decision models accounting for the considerable differences accruing from content.

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Appendix

Variables and Questionnaire Items

Decision Content
Respondents were asked to provide a brief description of a major organizational decision in the last year in which they had participated. Based on the description, the decision was coded into different types. For each of the two decision types (budget cutback and information technology), a binary variable was created (with 1 indicating presence of relevant content and 0 indicating absence of relevant content).

Decision Criteria
On a scale of 1 to 7, with 1 signifying not important and 7 signifying important, the respondents rated the importance of each of the following criteria in the decision:

- Cost-effectiveness
- Fairness
- Technical feasibility
- Usefulness

Decision Permanence (McAuley, Duncan, and Russell 1992)
On a scale of 1 to 9, with 1 indicating temporary and 9 indicating permanent, respondents indicated the degree of decision permanence.

Decision Stability (McAuley, Duncan, and Russell 1992)
On a scale of 1 to 9, with 1 indicating "variable over time" and 9 indicating stable, respondents indicated the degree of decision stability.

Interruptions in Decision Process
Respondents indicated number of interruptions in the decision process ranging from "none" (0) to "too many" (4).

Internal Participation
Number of agency employees, including yourself, contributing to the decision.

External Participation
Number of outside groups or individuals contributing to the decision.

Information Quality
Respondents indicated whether the information and analysis needs were met adequately or not on a scale from "not at all" (0) to "completely met" (4).

Decision Red Tape
Level of red tape faced in the decision. Please enter a number between 0 and 10, with *0* signifying *no red tape* and *10* signifying the *highest level of red tape.*

Hierarchy
Please assess the extent of hierarchical authority in your organization: Please enter a number between 0 and 10, with *0* signifying *few layers of authority* and *10* signifying the *many layers of authority.*