

Comparing Public and Private Sector Decision Making: Problem Structuring and Information Quality Issues

Stuart Dillon
John Buchanan
Jim Corner
Department of Management Systems
University of Waikato
New Zealand
jtb@waikato.ac.nz

Abstract

Generally speaking managerial decision making can be enhanced through providing appropriate decision support. The nature of that support depends on a number of variables, including the organisational context of the decision (public vs. private sector), the quality of information available and, of course, the willingness of decision makers to utilise such support. Anecdotal evidence suggests that since public and private sector decision makers operate in different decision making contexts and employ different decision processes, their support needs differ. This mixed-methodology empirical study seeks to isolate key decision processes as well as attitudes towards information quality of senior managers within public and private sectors in New Zealand. Results clearly indicate differences in the sectors; particularly in terms of how decisions are structured and how decision makers view the timeliness and relevance of the information they receive. This has implications for the provision of support for decision makers in these two sectors.

Key words: Decision making, information quality, public sector, private sector.

1. Introduction

Decision making is the most common task of managers and executives. “Successful [organisations] ‘outdecide’ their competitors in at least three ways: they make better decisions; they make decisions faster; and they implement decisions more” (McLaughlin 1995:443). While most would agree with this, much less is known about what ‘makes’ good or bad decisions, although it is generally accepted that a good decision process should give rise to good decision outcomes (e.g. Henig & Buchanan 1996).

To begin we first must understand the basic decision making process. Simon (1960) proposed a three-phase model of the decision process comprising the activities of Intelligence, Design and Choice. Intelligence involves identifying the need for a decision. Design begins when a decision need is identified and concludes when a choice is ready to be made. Weick (1979) conceptualises the design phase as moving from an unworkable version of reality to a workable version of reality. The final choice phase describes the activity of selecting the most appropriate course of action among available

alternatives.

The early literature on decision making focused on the choice phase and was essentially normative in its orientation, prescribing a 'best' way to decide. Decision Analysis (Keeney 1982) and the Analytic Hierarchy Process (Saaty 1980) are two well-known examples of this approach. Such approaches tend to adopt a 'one size fits all' approach, to make unreasonable assumptions about decision maker rationality and are not always cognizant of the different contexts (or environments) which constrain the decision making process. The impact of these constraints is such that many (e.g. Nutt 1993) have rejected the more normative approaches for decision support, and have turned their attention to descriptive approaches which take account of these real-world constraints. Rather than requiring decision makers to behave in certain ways (prescription), descriptive approaches start with how decisions are actually made and from there seek to improve these processes (Dillon 2002).

This study compares decision making for senior managers in the different contexts of the private and public sectors.

2. Literature

2.1 Information Quality

There are four commonly accepted dimensions of information quality: intrinsic, contextual, representational and accessibility (Wang & Strong 1996). Within these four dimensions many different measures of information quality have been introduced, including accuracy and objectivity (intrinsic dimension); relevance and timeliness (contextual dimension); and interpretability and ease of understanding (representational dimension). Access is the principal measure for the accessibility dimension.

In this paper we compare attitudes of upper level managers in the public and private sectors to the three measures of information quality; accuracy, relevance and timeliness, which are from Wang and Strong's (1996) intrinsic and contextual dimensions.

2.2 Decision Structuring

As noted earlier, the decision structuring process is more or less equivalent to the design phase of Simon's three-phase model and is possibly the most important part of the entire decision process; (see for instance Abualsamh, *et al.* 1990; Mintzberg, *et al.* 1976; Perry & Moffat 1997; von Winterfeldt 1980). This importance is not surprising; if, for instance, a decision is structured where some genuinely 'good' alternatives are not considered or if some important goals are missing, decision quality is likely to be compromised.

There are many definitions of decision structuring in the literature. Dillon (2002) has proposed a simple, non-directive, process-based definition: *Decision structuring is the process by which a decision situation is transformed into a form enabling choice.*

While decision structuring has received far less attention than other phases of the decision process (especially choice), a number of significant contributions have been made over the past three decades. Keeney (1982) was one of the first to incorporate specific problem structuring activities within the (prescriptive) decision analysis process. Contained within Keeney's structuring phase are the generation of proposed alternatives and the specification of objectives or goals. Nutt (1993) sought to characterise the various types of problem formulation (decision structuring) that occur in practice. With data from 163 decisions he identified four structuring processes; idea, issue, objective-directed and reframing. Nutt found some processes to be more effective

than others, with a strong inverse correlation between efficacy and frequency of use.

2.3 Public and Private Sector

Private sector motivations generally differ from those of the public sector; which is not surprising given that they have different environments or contexts. The private sector is typically associated with market forces while the public sector is more noticeably shaped by political considerations; one is about 'business' and the other 'government'; one tends to be decentralised and the other centralised (Perry & Rainey 1988).

These different environments imply different decision content. Bozeman and Pandey (2004) distinguish between the two poles of technical and political content where technical aligns with the concepts of efficiency and effectiveness, where there is general agreement about ends (or goals). This is in contrast with political content where disagreement about ends is the norm. Nutt (2006) has compared public and private sector decision making using the metrics of analysis and bargaining and found that private sector managers are more supportive of analysis-based decisions and public sector managers are more supportive of bargaining-based decisions. It would seem that the public sector is more problem-based, while the private sector is more opportunity-based. In general the conclusions of Bozeman and Pandey (2004) are supported; that decision content is a significant determinant of decision process and by implication one should expect to observe different decision processes in the public and private sectors.

3. Method

Our investigation into the impact of information quality and decision structuring is a mixed-methodology study (e.g. Mingers 2001), using an in-depth case study for decision structuring and a separate large scale survey for information quality.

3.1 Decision Structuring Case Studies

Sixteen senior managers representing a diverse range of public and private sector organisations were interviewed. Each was interviewed in depth on the nature of the decisions they make, the manner in which they make these decisions, and what they considered to influence their behaviour. Participants also agreed to complete a questionnaire so that cross-participant comparison and interview response validation could be performed. Following data collection (and confirmation with participants that this had been interpreted correctly), raw data from all sources was analysed using an adaptation of the data analysis aspects of the grounded theory approach (e.g. Glaser & Strauss 1967). This adaptation occurred such that the procedures best match the subject of the study and the theoretical underpinnings of the research and the researcher. Successful implementation of the grounded theory approach permits such adoption (Strauss & Corbin 1990). The methodology is fully explained in Dillon (2002).

3.2 Information Quality Survey

The data on information quality comes from a larger international study of the impact of culture on business decision making and information use. The original study for New Zealand was undertaken in 2002 using a survey method. From the Kompass Products and Services of New Zealand Companies information database, three distinct industries were selected in order to achieve a balanced cross-section of the population: manufacturing, service and government. The sample population was further stratified by

organisation size, with organisations having a greater number of employees selected to ensure a sufficient number of respondents at three levels of management authority (described as highest, middle or lower). A total of 450 organisations were contacted, 150 from each sector. Each of these 450 organisations received six questionnaires, two questionnaires for each of the three levels of management, resulting in a total of 2,800 distributed questionnaires. A total of 818 usable responses were returned, providing a response rate of 29%.

The analysis was limited to managers and executives which reduced the sample size to 466, evenly split between public and private sector managers. Further detail is provided in Parslow (2003).

4. Results and Discussion

4.1 Decision Structuring

The following model (Figure 1) of decision structuring emerged from the study. Although the model is essentially the same for both public and private sector senior managers, the nature of and impact on the various process activities are quite different.

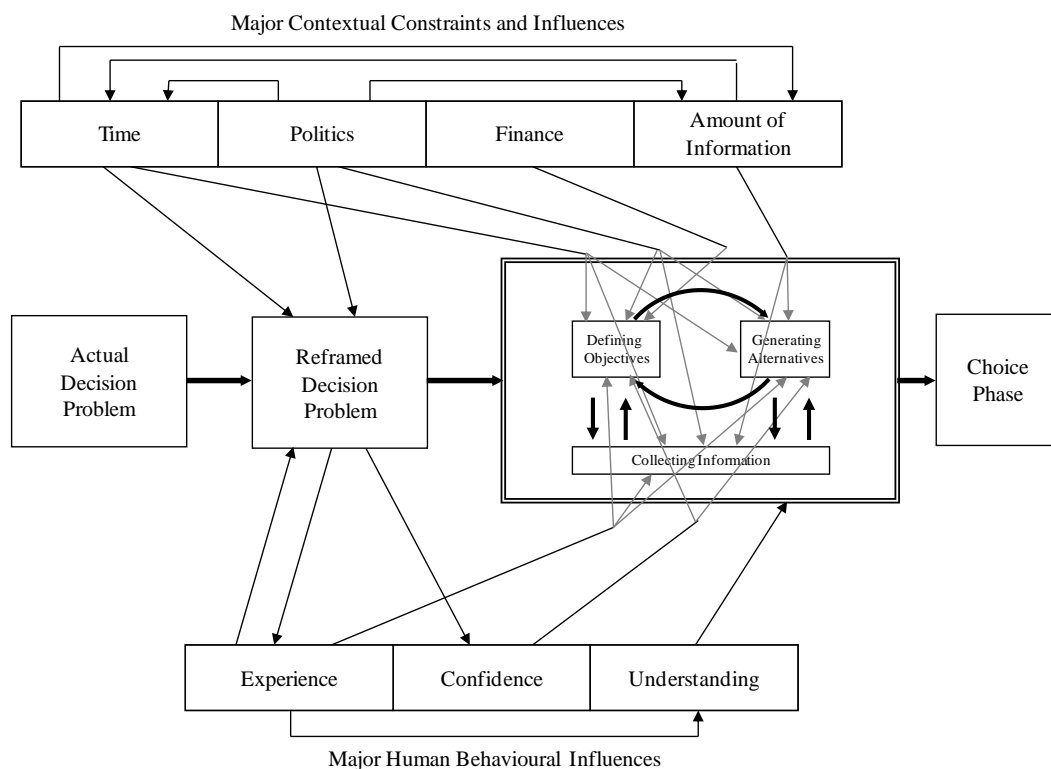


Figure 1: An Influence Model of Decision Making

There are a few key decision structuring activities common to all decision makers examined in the case studies. However the sequencing of these activities varied. During decision problem structuring, a combination of information gathering, goal definition and alternative generation takes place, in no particular order, and often in a repetitive and cyclical manner. Similar to Nutt's (1993) findings, the more structured decision processes began with defining objectives or goals, whereas others would begin with generating potential alternatives, often without any explicit consideration given to the underlying objectives of the decision problem. Information gathering, while often a

stage in its own right, was usually employed to support the activities of objective definition and alternative generation. However, the significance of information in the decision structuring task varied considerably. It appeared that with more information available and/or greater use of information, a senior manager's reliance on intuition decreased.

4.1.1 Decision Influences

Decision-maker behaviour was influenced by both external influences and human behavioural factors. External influences (context) included time, politics (both internal to the organisation and external), limited finance and the quantity of information (too much and too little).

Internal influences (cognition) comprised experience, in terms of the level of experience a senior manager has in making non-trivial decisions, confidence to act in a way that he or she feels is most appropriate, and understanding of the context/ domain of the decision problem.

4.1.2 Contrasting Behaviours

Incorporating the elements of the Figure 1 model, two variations are presented that exhibit the difference between decision structuring in the public and private sectors. These contrasting models of public and private sector decision structuring are shown in Figure 2. Differences are noted by different sized arrows and shading (strength of influence), and numbers reflect the order of problem structuring activities in the public sector model. Such ordering of process was not observed in the private sector.

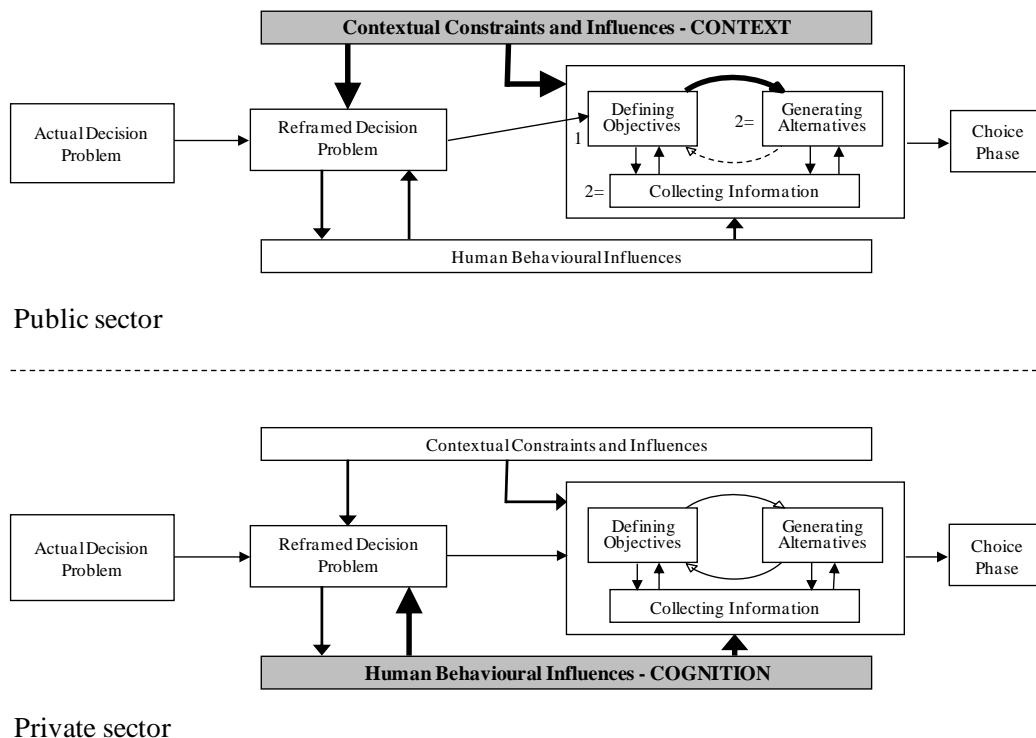


Figure 2: Public and Private Sector Models of Decision Structuring

Analysing the two sectors separately suggests that public sector decision making is typically more open, transparent and structured. Unlike the private sector, decisions made in the public arena are open to broad stakeholder scrutiny and therefore decision

processes are often prescribed or at least devised prior to the actual decision making. Private sector decision making is generally more ad-hoc and occurs more proactively. As shown in Figure 2, contextual constraints and influences play significant roles in structuring public sector decisions. Because of the constrained nature of decisions made in this environment, human behavioural aspects have much less influence.

Another obvious point of difference with the public sector model is sequentiality of process; only public sector senior managers were able to describe activities that had any form of sequential process. The typical public sector decision making process begins with the definition of objectives or goals (shown as number “1” in Figure 2). Given that disagreement about ends or goals is a feature of the public sector (Bozeman & Pandey 2004), beginning with objective definition is not surprising. Moreover, the public sector requirement for transparency increases the importance of clarity of objectives. Alternatives are generated and information is collected only after objectives have been defined. Alternative generation and information collection are simultaneous activities (shown as “2=” in Figure 2). The nature and frequency of information collection is strongly influenced by the requirements of the sector and the particular decision situation. The typical public sector decision generally emerges from within the organisation, i.e. it is bottom-up, unforeseen, and therefore reactive.

In contrast to the public sector, the contextual aspects of private sector decisions were less influential; several senior managers stated clearly that constraints of limited finances or time would not be allowed to influence their decision making. Conversely, given the relatively unregulated nature of private sector decision making, human behavioural influences played a much greater part in the decision structuring process. Confidence played a major role and overall, private sector decision makers appeared more confident in their decision making ability. Unlike the public sector model, no obvious (sequential) process could be observed; the activities of defining objectives and goals, generating alternatives and collecting information occurred in no particular order. In another significant contrast, the typical private sector decision can be described as top-down, foreseen and proactive, consistent with a more opportunity-based mode of decision making.

An interesting observation relates to the backgrounds of participants. While many had only worked in either the public sector or in the private sector, some had worked in both sectors. Senior managers who had worked in both often stated that they experienced significant difficulties when working in one of these sectors. Those who had developed skills within the public sector found the private sector environment extremely pressurised and unsupportive. Conversely, those with prior private sector experience felt the public sector was overly restrictive and bureaucratic. It appears that the sector in which a manager has developed his or her skills and experience is most likely to be the sector in which they are most suited and most successful.

4.2 Information Quality

As shown in Figures 1 and 2, information collection and by implication, information quality, is a significant activity in the decision structuring process for both sectors. We now turn attention to the quality of information both desired (ideal) and perceived (actual) for senior managers in the public and private sectors.

Responses from 11 of the 76 questions from the questionnaire were used, comprising five demographic questions and six questions on information quality. These

six questions addressed ideal and actual scores using a five-point Likert scale for the measures of information quality. The format for ‘ideal’ questions was: How important is it to you to: e.g. ...*have accurate information?* Responses ranged from 1 – ‘of utmost importance to me’ to 5 – ‘of very little importance to me’. The ‘actual’ question format was: Now, as compared to what you want, how satisfied are you at present with: e.g. ...*the accuracy of the information you receive at work?* Responses ranged from 1 – ‘very satisfied’ to 5 – ‘very dissatisfied’.

Table 1 presents the mean scores for the three measures of information quality: accuracy, timeliness and relevance. These results are analysed in three ways: (1) according to the gap between the ideal and actual information quality, (2) according to the public and private sector responses over the ideal, actual and gap columns, and (3) according to the relative importance of the three information quality measures.

4.2.1 Ideal – Actual Information Quality Gap

The gaps between ideal and actual are all significantly different from zero—for private, public and in total—across all three measures of information quality. Expectations exceed perceptions in every instance, as one would realistically expect.

4.2.2 Sector Responses to Information Quality

In terms of the ideal measures of information quality, both public and private sector senior managers scored them roughly the same—there was no significant difference between any of the three quality measures. Despite the different characteristics of the two sectors, both desired very similar levels of information accuracy, timeliness and relevance.

Info Quality Measure	Sector	Ideal	Actual	Gap
Accuracy	Private	1.44	2.44	1.00
	Public	1.42	2.33	0.90
	Total	1.43	2.38	0.95
Timeliness	Private	1.77	2.60	0.83
	Public	1.87	2.41 *	0.54 **
	Total	1.82	2.51	0.69
Relevance	Private	1.85	2.30	0.44
	Public	1.85	2.09 **	0.24 **
	Total	1.85	2.19	0.34

*p<0.050; **p<0.01, using one-way ANOVA.

Table 1: Mean Information Quality Scores

In terms of actual satisfaction and the gap between ideal and actual, there were significant differences between private and public sector senior managers for both timeliness and relevance, as shown by the astericks in Table 1. For these two measures, public sector senior managers were more satisfied with information quality and their gaps were smaller than their private sector counterparts.

However, for the accuracy measure there is no significant difference between the public and private sectors; they are similarly (dis)satisfied and have similar gaps. Wang

and Strong (1996) offer an explanation: it is the contextual measures of timeliness and relevance that differ between sectors, whereas the intrinsic measure of accuracy applies equally to decision makers in each sector. Thus information accuracy appears to be independent of the context (public or private), as expected for an intrinsic quality dimension.

4.2.3 Relative Importance of Information Quality Measures

Additionally, and not shown in the table, a Tukey HSD test shows that the total gaps for each measure of information quality are all significantly different ($p < 0.01$), which allows a clear ranking of the three measures from best to worse as: relevance, timeliness, accuracy (ie, $0.95 > 0.69 > 0.34$). Information accuracy is clearly the most important issue for both sectors.

5. Results and Discussion

This study is largely consistent with previous research in demonstrating that decision makers in the public and private sectors differ in regard to attitudes to information quality and approaches to decision structuring. While it is not a new result that there are significant differences between the public and private sector, this study highlights new dimensions of difference. Common to both sectors is the primary importance of information accuracy, an area where both sectors are dissatisfied with actual measures.

Public sector decisions were characterised as being bottom-up, unforeseen and reactive; decisions are made as and when they need to be rather than being actively sought. The public sector appears to have more structured decision processes as necessitated by the political context. Although this has resulted in a more satisfactory contextual information quality in respect of timeliness and relevance and an apparently high level of analysis, in the end political bargaining appears to be the main determinant of the decision outcome. The challenge, therefore, in the public sector is perhaps for better decision support in politics of bargaining without compromising the value of the information already collected.

Conversely, decision making within the private sector is considered to be an essential enabler of a company's growth and competitiveness. For this reason, private sector decision making is characterised as top-down, foreseen and proactive. If, then, there is a foreseen aspect to decision making, then it is possible that if private sector managers initiate the information collection process earlier, the timeliness of information should improve.

Decision support, and in particular the decision structuring process, must be more responsive to the dynamic and complex nature of real decision situations. It needs to be accepted that many observed constraints cannot be eliminated; instead consideration needs to be given to their management. In addition, less emphasis should be placed on trying to persuade decision-makers to follow a pre-specified process; rather the focus should be on ensuring that good decision making principles are adhered to. These principles include developing a process (at the outset) that will guide the overall decision-making, identifying objectives/goals by which decision alternatives can be measured, being aware how the decision context can affect the decision process, and getting accurate, timely, and relevant information.

There are also recruitment implications. When recruiting, employers should consider the decision making experience of candidates, while candidates should be fully aware of the decision making context within which the organisation operates.

Finally, a necessary condition for good knowledge management is good information management, particularly as the activity of information collection influences the decision structuring process and the all important decision outcome.

6. References

- Abualsamh, R. A., Carlin, B. & McDaniel Jr, R. R. 1990, "Problem Structuring Heuristics in Strategic Decision-Making." *Organizational Behavior and Human Decision Processes* **45**: 159-174.
- Bozeman, B. & Pandey, S. K. 2004, "Public Management Decision Making: Effects of Decision Content." *Public Administration Review* **64**: 553-565.
- Dillon, S. M. 2002, Understanding the Decision Problem Structuring of Executives, Thesis, University of Waikato.
- Glaser, B. & Strauss, A. 1967, *The Discovery of Grounded Theory*, Aldine, Chicago.
- Henig, M. I. & Buchanan, J. T. 1996, "Solving MCDM problems: Process concepts." *Journal of Multi-Criteria Decision Analysis* **5**: 3-21.
- Keeney, R. L. 1982, "Decision Analysis: An Overview." *Operations Research* **30**: 803-838.
- McLaughlin, D. J. 1995, "Strengthening Executive Decision-Making." *Human Resource Management* **34**: 443-461.
- Mingers, J. 2001, "Combining IS Research Methods: Towards a Pluralist Methodology." *Information Systems Research* **12**: 240-259.
- Mintzberg, H., Raisinghani, D. & Theoret, A. 1976, "The Structure of 'Unstructured' Decision Processes." *Administrative Science Quarterly* **21**: 246-275.
- Nutt, P. C. 1993, "The Formulation Processes and Tactics Used in Organizational Decision-Making." *Organization Science* **4**: 226-251.
- Nutt, P. C. 2006, "Comparing Public and Private Sector Decision-Making Practices." *J Public Adm Res Theory* **16**: 289-318.
- Parslow, K. J. 2003, An Investigation into the Importance of Information for Organisations: A New Zealand Context, 599 Report of an Investigation Thesis, University of Waikato.
- Perry, J. L. & Rainey, H. G. 1988, "The Public-Private Distinction in Organization Theory: A Critique and Research Strategy." *The Academy of Management Review* **13**: 182-201.
- Perry, W. & Moffat, J. 1997, "Developing Models of Decision-Making." *Journal of the Operational Research Society* **48**: 457-470.
- Saaty, T. L. 1980, *The Analytic Hierarchy Process*, McGraw Hill, New York.
- Simon, H. A. 1960, *The New Science of Management Decision*, Prentice Hall, N.J.
- Strauss, A. & Corbin, J. 1990, *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, Sage, CA.
- von Winterfeldt, D. 1980, "Structuring Decision Problems for Decision Analysis." *Acta Psychologica* **45**: 71-93.
- Wang, R. Y. & Strong, D. M. 1996, "Beyond accuracy: what data quality means to data consumers." *J. Manage. Inf. Syst.* **12**: 5-33.
- Weick, K. E. 1979, *The Social Psychology of Organizing*, Addison-Wesley, Reading, MA.