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AN EMPIRICAL FOUNDATION OF STRATEGIC DECISION-MAKING PROCESSES: TOWARDS A SYNTHESIS AND A FUTURE RESEARCH AGENDA

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Abstract

Despite the crucial role of strategic decisions (SDs), the stream of research on strategic decision-making has not departed significantly from a stage of being based on "mature paradigms and incomplete assumptions" (Eisenhardt and Zbaracki, 1992, pp. 17). Arguably, one of the major reasons for this, is the difficulty encountered in identifying and measuring process variables.

This paper based on a sample of 70 SDs offers an empirically derived framework for identifying and measuring strategic decision-making processes (DMPs) on the following nine dimensions: comprehensiveness/rationality, formalised rules, formal co-ordination devices, financial reporting, hierarchical decentralisation, lateral communication, politicisation, problem-solving, dissension, gestation and duration process time.

Based on these dimensions a holistic framework for studying of strategic DMPs is advanced, which takes into account both their antecedents and outcomes. Directions for research in the area of strategy process are discussed. (M10)

Introduction

In a survey among strategy academics (Lyles, 1990), the area of strategic decision-making emerged as one of the most preferred areas of research. It is true that during recent years, a substantial body of theory has emerged. However, it is still widely recognised, that our knowledge of strategic Decision-Making Processes (DMPs) is based mostly on normative or descriptive studies and on assumptions which highly untested (e.g. Dean and Sharfman, 1993; Papadakis and Barwise, 1998a;b; Rajagopalan, et al. 1993).

It has been argued that, one of the major reasons why strategy process research has lagged behind research on strategy content is the difficulty encountered in **identifying, observing,** and **measuring process variables** (Rajagopalan et al. 1993). Complementing this view, others argue that there is also a need for a more thorough examination of the interrelationships between the process, context and outcomes of strategic decisions (e.g. Eisenhardt and Zbaracki, 1992; Hart and Banbury, 1994; Rajagopalan, et al. 1993; Huff and Reger, 1987; Papadakis and Barwise, 1998b).

It is our view that an appropriate approach to strategic decision-making processes (DMPs) should be first, to empirically derive and support a set of important decision process dimensions, based on the study of a significant number of actual strategic decisions. Such an approach should take into account and integrate all existing streams of research in strategic DMP (e.g. Narayanan and Fahey, 1982; Nutt, 1984; Dean and Sharfman, 1996; Butler et al. 1979; Hickson et al. 1986; Miller, 1987).

Such an empirically derived set of decision dimensions could then be used as an essential building block in developing and testing a holistic framework for strategic decision-making processes and their antecedents and outcomes (e.g. Rajagopalan et al. 1998).

Aiming at contributing towards this objective, the present paper: (i) makes a brief review of the vast literature on strategic DMPs and theoretically explores the salient dimensions which could reliably describe the process, (ii) empirically derives and validates a set of generic process dimensions and (iii) positions this set as an integral part of a holistic framework for studying strategic DMPs, and argues for their usefulness and importance for further research in the area.

Conceptual Framework

Several researchers have tried in the past to classify the vast array of publications in the study of the processes of making SDs (e.g. Hart, 1992; Nutt, 1984; Schoemaker, 1993). It is beyond the scope of the present paper to analyse in depth the properties of various schools of thought in the area[1]. However, one can classify the relevant research into three streams, of which: (a) the first has produced a number of *models explaining deci-*

1. A complete literature review has been undertaken, but on account of space limitations it is not fully represented here.

sion-making behavior, (b) the second, attempts to *identify specific stages/steps* in the DMP and (c) the third consists of *normative and empirical research on dimensions* describing strategic DMPs.

The following sections briefly analyse of the main properties of each of these streams.

Models of Decision-making Behavior

A significant part of the literature on decision-making attempts to classify and explain DMPs in terms of a number of decision-making models i.e. rational, bureaucratic, incremental, political, avoidance, 'garbage can', symbolic, entrepreneurial (e.g. Chaffee, 1985; Hart 1992; Lyles and Thomas 1988). Drawing from the vast literature available we will only stress a few key points.

First, these models are distinguished by a number of dimensions including style of strategy making, role of top management, role of organisational members, criteria used, processes followed, assumptions on which they are based, environment suitable for each model, size of the firm, etc.

Second, none of the above mentioned typologies/models captures the plethora of issues, concepts, dimensions and biases present in strategic decision-making. They are indeed simplifications, explaining only small portions of very complex phenomena. Any decision model might be in the repertoire of any decision-maker, and "successful firms might be expected to utilise all of the available decision models as thiking frameworks" (Lyles and Thomas, 1988, pp. 141). Chaffee (1985) went one step further to suggest that there is a hierarchy of strategic typologies, culminating in those that are relatively comprehensive and complex.

Third, the utilisation of any model seems to be the interplay of a number of forces, such as corporate environment, managerial vision and perceptions, organisational learning processes, planning systems and various other internal and external forces.

Identification of Stages/Steps in Strategic Decision-making Processes

Another significant body of research addresses the question whether specific stages in a DMP can be identified. One of the earliest attempts to formulate specific stages in a decision belongs to Soeldberg (1966). He

describes the decision process as a sequence of 8 stages, commencing with the participation stage and ending with the feedback and control stage.

A frequently cited article on the nature of strategic decision processes is that of Mintzberg et al. (1976). They view decision-making as a series of three interrelated central phases incorporating seven action routines, as well as six sets of dynamic factors. They do not advocate a rational sequential progression of stages in the process, rather they stress the complexity and convolution that may characterise SDs.

Based on the existing literature, we can pinpoint a large number of prescriptive and descriptive works, which try to elucidate specific stages in the DMP (e.g. Fredrickson 1984; 1985; King, 1975; Nutt, 1984). Despite this, there are still no widely recognised series of stages/steps in DMPs. However, the researcher should be cautious about adopting any of these models. Despite their apparent reasonableness and conceptual rigor there exist serious challenges to the idea of sequential DMPs. In fact, there may exist a very intimate relationship between the different stages of the process, since in many cases, managers tend to seek solutions even at the stage of situation diagnosis, or evaluate possible alternatives even before they have collected all the necessary information (Mintzberg et al. 1976; Nutt, 1984).

Dimensions of Strategic Decision - making Processes

Finally, a third, smaller stream of research attempts to adopt a set of decision dimensions (e.g. Bourgeois and Eisenhardt 1988; Hickson et al. 1986; Lyles, 1987; Miller, 1987; Sharfman and Dean, 1998; Stein, 1981). This stream contends that the DMP is far from being an iterative well-defined and sequentially evolving set of activities. Thus, instead of using step by step models of DMPs researchers create a number of dimensions describing generic attributes of the process.

The Bradford team of researchers (Hickson et al. 1986), have producted a most comprehensive and illuminating set of insights. They classified decision processes according to the following characteristics: *complexity* (describing the intricacies and difficulties surrounding the process), *politicality* and a third dimension consisting of several *unrelated process aspects* (i.e. duration, disruption, formality, negotiation etc.).

In addition to the influential Bradford studies, several other teams adopting a similar orientation have appeared in the last two decades. Most

of these research efforts have derived their process dimensions either through in-depth case studies or through conceptualization and review of the relevant literature. With the exception of Chou et al. (1998), Stein (1981) Cray et al. (1988), there has been little emphasis on the need to quantitatively validate the proposed dimensions of the process. As mentioned before, the present paper aims to achieve both: i.e. to develop through a literature review an extensive set of DMP dimensions and using this set to empirically derive a number of dimensions describing the strategic DMP.

A meaningful categorisation of DMP dimensions, based on the study of the relevant literature, results in the following indicative process dimensions:

- **Rationality/Comprehensiveness dimension** (e.g. Dean and Sharfman, 1993a; b; Fredrickson, 1984; Lyles and Mitroff, 1980; Miller et al. 1988). Elements of rationality can also be traced in several other studies as *complexity of methodology* (Langley, 1989; 1990), *degree of inquiry,* (Lyles, 1987), *scrutiny* (Cray et al. 1988), *information gathering,* (Fahey, 1981).
- **Political/dynamics dimension.** This includes among others *politicality* (Butler et al. 1991; Dean and Sharfman, 1993b; Lyles 1987; Pfeffer and Salancik, 1974), *negotiation/bargaining* (Cray et al. 1988; Hickson et al. 1986; Pettigrew, 1973), *individual vs group dynamics* (Stein, 1981), *power* (Narayanan and Fahey, 1982), and *consensus/dissension* (Lyles, 1987; Miller, 1987).
- **Centralisation** (e.g. Cray et al. 1988; Lyles, 1987; Mallory et al. 1983; Miller 1987).
- **Normalisation/standardisation** (Grinyer et al. 1986; Mallory et al. 1983; Stein, 1981).
- **Disruption, impedance, speedups and other dynamic factors** (Cray et al. 1988; Mintzberg et al. 1976; Hickson et al. 1986).
- **Other process dimensions include:** *duration* (Fahey 1981; Hickson et al. 1986; Cray et al. 1988), *risk taking behavior* (Miller, 1987), *need for intuition* (Lyles and Mitroff, 1980).

Adopted Research Approach

The design of this research does not aim simply to follow a rational-sequential description of unstructured concepts. Instead, *it aims to take advantage of a number of generally accepted dimensions of the DMP, while building on the premises of relevant literature arguing for the existence of certain stages in the process.* A number of the aforementioned dimensions will be used as

building blocks in the attempt to empirically derive a set of meaningful process dimensions.

At the same time a five-stage model will be adopted that can, to some extent, depict every DMP. This *model,* incorporates the diagnosis of the situation phase, the alternative generation phase, the evaluation and selection phases and the decision integration stage.

Methods

Unit of analysis: The study focuses on individual SDs as the unit of analysis. To keep the unit of analysis clear and reasonably comparable across cases, we have limited our sample to strategic investment decisions (SIDs), i.e. SDs which involve significant capital investment and therefore require some degree of explicit appraisal and authorisation (Chu et al. 1998; Marsh et al. 1988).

Data Collection: The study can be characterised as "multi-method, in-depth field research" (Snow and Thomas 1994). The data were collected as follows: (i) initial CEO interview, (ii) semi-structured interviews with key participants, (iii) completion of two questionnaires: one general for the CEO and one decision-specific for the key participants, and (iv) supplementary data from archival sources (e.g. internal documents, reports, minutes of meetings).

The research covers 70 SIDs in 38 manufacturing firms in Greece. The SIDs were identified at the initial CEO interview. The CEO was asked to complete the first, general, questionnaire providing information about the company, its environment, and its organisation. He (all CEOs happened to be men), was then asked to name the two most important *investment* decisions which had taken place in the last 2-3 years. In our attempt to minimise distortion and memory failure problems, we asked for recent decisions.

He was asked to give a brief description of each decision and the process followed in making it, and to name all the key participants as well as the manager with the most intimate knowledge of the process, e.g. the project champion (This methodology follows that of Hickson et al. 1986). In most cases, we had access to the paper trail documenting the decision and its process, before interviewing the designated manager: investment decisions tend to be better documented than other SDs (Marsh et al. 1988). This aided our understanding and helped us in checking managers for possible memory failure and ex-post rationalisation (Huber and Power 1985).

Semi-structured interviews were conducted with the most knowledgeable manager (Huber and Power 1985). We followed a "funnel sequence" whereby the interview started with a semi-structured discussion using open-ended questions (Bouchard 1976). Inerviewees were then handed the second decision-specific questionnaire designed to measure the dimensions of the DMP. Their responses were checked against the initial CEO interview and the paper trail.

Sample: The sampling frame comprised all manufacturing enterprises in Greece with more than 300 employees, drawn from three industrial sectors (food, chemicals and textiles), a total population of 89 companies of which 38 participated in the survey. In most cases, two SIDs were studied in each firm, resulting in a sample of 70 SIDs. The response rate achieved (approximately 43%) is extremely high considering the intrusive nature of the research and the fact that top management was asked to devote several hours of its time. Comparison between respondent and non-respondent firms on the basis of three objective measures (number of employees, total assets, and return on assets), verified the representativeness of the final sample.

Reliability and Validity: A study based on participant recall, though the dominant method of studying strategic DMPs, has inherent limitations (Bouchard 1976; Huber and Power 1985; Kumar et al. 1993). A number of procedures have been suggested to help reduce their impact, including the use of multiple informants (Kumar et al. 1993). Despite this, even these methodologies do not guarantee objectivity. Nevertheless, we followed several tactics in our attempt to alleviate possible biases (Bourgeois and Eisenhardt 1988; Huber and Power 1985; Kumar et al. 1993), *First,* archival records documenting the process and its dimensions were collected prior to our main interview. *Second,* particular caution was exercised to minimise distortion and memory failure problems. This was attempted by selecting *recently taken decisions* (Mintzberg et al. 1976), by interviewing only *major participants* (Kumar et al. 1993), by adopting a *"funnel sequence"* method in conducting interviews (Bouchard 1976), by cross-checking interview data against other managers recollections and other sources, and by using additional informants in cases of incomplete information.

Adopted Dimensions of Strategic Decision Processes

When designing this research a large number of dimensions of strategic DMPs which came out of the literature review were operationalised. The

following paragraphs discuss the theory behind each characteristic and describe the process followed to develop constructs to measure them.

Rationality/Comprehensiveness

Undoubtedly, one of the most important dimensions characterising any decision process is the degree of rationality-comprehensiveness. It is the central feature distinguishing between synoptic/rational and incremental or political processes, with a prominent role in the decision-making theory and practice (e.g. Dean and Sharfman, 1993a; b; Hart, 1992; Steiner, 1969).

Despite its importance only a handful of empirical studies have attempted to operationalise the rationality dimension (e.g. Dean and Sharfman, 1993a; Lyles and Thomas, 1988; Lyles and Mitroff, 1980). Fredrickson (1984; 1985), devised perhaps the most elaborate construct. He adopted a four-stage model including such stages as situation diagnosis, alternative generation, alternative evaluation and decision integration. For each stage he constructed composite variables measuring comprehensiveness on seven-point Likert-type scales. The dimensions distinguishing more comprehensive/rational from less comprehensive/rational processes were:

- *scheduled meetings* in each stage
- assignment of *primary responsibility*
- degree of *information seeking activities*
- degree of systematic use of *external* sources for information seeking
- number of *employees* directly involved
- extent to which *specialised consultants* were used
- years of *historical data review*
- *functional expertise* of people involved

Capitalising on Fredrickson's comprehensiveness dimensions and based on previous discussion, the present research has also adopted a five-stage process model. For each stage, Fredrickson's comprehensiveness dimensions are measured, on a five-point scale. Then the comprehensiveness elements for each stage are summed to construct five composite variables, each representing the comprehensiveness/rationality dimension of the respective stage. Following Fredrickson, five composite variables were created measuring comprehensiveness in: situation diagnosis (com_diag), alternative generation (com_gen), alternative evaluation (com_eva), making of final decision (com_deci), and decision integration (com_inte). We should not that both

Fredrickson and Mitchell (1984) and various other researchers who have used similar constructs (e.g. Smith et al. 1988; Wooldridge and Folyd, 1990), have provided adequate validity checks.

normalisation/standardisation of the Process

Another characteristic which emerged from the literature review is the degree of Formalisation/standardisation of the process, or the extent to which the management processes of the enterprise are explicit, usually compiled in written form. Indeed, organizations as social systems, tend to introduce some type of formalisation when having to cope with significant issues. This ensures alignment between hierarchical layers or various units and functions in the organisation.

According to the literature, formalisation may, among others, take the form of: *a formal screening process* which helps in deciding whether a specific decision should be further investigated (e.g. King, 1975), *written procedures,* which guide the process (e.g. Avlonitis, 1980), a *formalised procedure* which helps in the search for *alternative courses* of action (e.g. King, 1975), some type of *standard form or document* assisting management to reach a final decision (e.g. Avlonitis 1980), certain *hierarchy of approval* (e.g. King, 1975), task forces, specially formed *committees or liaison devices* (e.g. Miller, 1987).

Seventeen scales ranging from one to seven (where 1-absolutely false and 7-absolutely true) were used to measure formalisation of the process. Then they were subjected to a factor analysis investigation in order to reveal possible meaningful sub-dimensions. The results are presented in table 1. Interestingly, the investigation resulted in a **three-factor** solution. The first factor measures the degree of existence of a set of *formalised rules* followed during the process. The second, represents the existence of *formalised ways* to *exchange ideas* and finally the third factor, measures what Miller (1987) describes as *formal co-ordination devices,* existing to help make the decision.

Reporting Activities in Support of the SID

Another important aspect of each DMP is the degree of reporting and evaluative activities. During the last 50 years both financial theory and practice have made considerable progress developing techniques for evaluating investment projects (e.g. Sharpe, 1985). Extensive research investigating the contribution of modern finance to investment decision-making, has followed (e.g. Pike, 1989). A significant number of financial and other devices are

Formalization/Standardization Dimensions	Variable name used for SPSS processing	Factor Loadings:[1] Factor 1 set of formalized rules followed	Factor 2 formalized ways to exchange ideas	Factor 3 Formal coordination devices
Written Procedure Guides Process	(formproc)	.87635		
Formal Procedure to Identify Alternatives	(formalte)	.83807		
Formal Screening Procedures	(investig)	.79636		
Minimum Standards Set	(minstand)	.71732	.35672	
Formal Document Guides Final Decision	(document)	.67653	.31835	
Predetermined Evaluation Criteria	(criteria)	.64599		
Pre-established Techniques for SID Evaluation	(evarule)	.58453	.53318	
Formal Discussion of Possible Alternatives	(gensched)		.81355	
Brainstorming	(brainsto)		.77063	
A Specific Department Makes Evaluation	(specdept)		.70662	
Formal Meetings Among Top Managers	(schedul2)	.34820	.59795	.27312
Delegation of Responsibilities	(responsi)	.25958	.51292	.38422
Hierarchy of Approval	(hierapro)	.43719	.50283	
Specially Formed Task Forces	(tasforc)			.90986
Specially Formed Interdepartmental Committees	(commit1)			.89905
Specially Formed Liaison Devices	(liaison)		.29294	.76961
Eigenvalue		6.83	2.00	1.48
Percentage of Variance Explained		42.7	12.5	9.3
Cumulative Percentage Explained		42.7	55.2	64.5
Number of Items in Factor		7	6	3
Name of Factor Variable Created		forma1	forma2	forma3

- *financial measures* (e.g. cash flows, payback, NPV, IRR),
- *probabilistic assessment* of the range of possible results for one or more cash flows,
- *detailed cost studies* of each of the alternatives,
- proforma *financial statements,*
- an *explicit ranking of alternatives,*
- *contingency plans* for possible occurrences,
- the *assumptions* on which the evaluation was based,

Despite the significant emphasis given by finance to this point, it seems that such factors have less importance in 'real-world' decision-making (Butler et al. 1991; King, 1975; Marsh et al. 1988; Mintzberg et al. 1976). It is worth quoting Butler et al. (1991 pp. 402), who contend that *"the emphasis in the capital budgeting literature on formal investment appraisal using discounted cash flow methods is misplaced. Equally apparent is the relatively low priority given to risk and uncertainty factors".* Nevertheless, it appeard worth further exploring this dimension.

Sixteen, seven-point scales are used to measure the extent of formal reporting activities. As shown in table 2, when factor analyzed they resulted in two factors. The first factor incorporates variables relating to the *reporting on alternative ways of action.* The second factor is composed of variables measuring *extent of financial reporting activities.*

Especially the second factor could also be interpreted as 'use of analytical techniques'. One might contend that both factors might be viewed as aspects of the degree of rationality characterising strategic DMPs. Indeed, both may represent aspects of rationality worthy of further exploration. Thus, we will deal with this in subsequent sections of this paper.

Decentralization/Participation

Central to most accounts of strategic DMPs is the degree of centralisation-decentralisation of the process (e.g. Astley et al. 1982; Butler et al. 1979; Cray eta al. 1988; Lyles 1987; Miller et al. 1988). Recent conceptualisations of strategy formulation question the view that strategic decision-making is a top management prerogative. For example, Burgelman (1983) views strategy as the outcome of internal corporate venturing, Fredrickson (1984), recognizes that several individuals from various layers may participate in strategic decision-making, and Schilit and Paine (1987) measures the significance of middle-level managers involvement.

Reporting Activities		Factor Loadings*	
		Factor 1	Factor 2
		Reporting on alternative ways of action	Financial reporting analysis
Direct Comparison of Alternatives	(altecomp)	.83675	.29415
Explicit Ranking of Alternatives	(ranking)	.82921	
Estimation of Each Alternative's Success Probabilities	(success)	.79136	.25851
Departments Worked out List of Alternatives	(listalte)	.75.421	
Risk Analysis-specified Attitude Toward Risk	(riskatti)	.73843	
Contingency Plans	(contipla)	.72483	.35267
Feasibility of Each Alternative	(feasibil)	.69119	.47071
Probabilistic Assessment of the Range of Possible Results	(probabil)	.65337	.49985
Estimation of Each Alternative's Consequences	(conside)	.62455	.55926
Sensitivity Analysis	(sensitiv)	.62121	.46261
Use of NPV-IRR Methods	(npvirr)		.86534
Proforma Financial Statements	(finstate)	.26672	.86265
Detailed Labor-cost Requirments	(labor)		.82659
Explicitness of Hypotheses	(hypothe)	.38130	.79509
Detailed Cost Studies	(conststud)	.53882	.60145
Incorporation of SID into Company wide Financial Plans	(companal)		.55678
Eigenvalue		9.23	1.61
Percentage of Variance		57.7	10.1
Cumulative Percentage		57.7	67.8
Number of Items in Factor		10	6
Name of Factor Variable Created		10	6
Name of Factor Variable Created		repor1	repor2

balanced participation of various departments in the DMP. In measuring hierarchical decentralisation, the approach introduced by Tannenbaum (1968) was followed. It is based on the total amount of participation of various hierarchical levels and departments in each of the five stages of the decision process that we have adopted, since each stage is likely to have a different level of centralisation-decentralisation (Grinyer et al. 1986). Five hierarchical levels were taken into account (i.e. owner-main shareholder, CEO, first level directors, middle managers, lower level managers). Responses were taken on a five-point Likert-type scale, anchored with T, no involvement at this stage, to '5', active involvement. For every stage in the process, the total participation for all five hierarchical levels was computed. Five composite variables were obtained, each measuring the degree of hierarchical decentralisation in the respective stage of the process.

Similarly, the degree of *lateral communication* is measured for five main departments (i.e. finance-accounting, production, marketing, personnel, and purchasing), and for each of the **five** stages of the process.

Group Behavior Dimension

Another characteristic of strategic DMPs is the group behavior dimension. Its importance has been well documented in the literature, because organizations do not always act rationally. Instead, they are usually highly political entities where multiple, sometimes conflicting goals are present (Eisenhardt and Zbaracki, 1992; Narayanan and Fahey 1982).

The existence of conflicting viewpoints favours coalition formation within the company. Each coalition supports its interests and influences strategy making. Differences that emerged are likely to be resolved through bargaining, persuasion and negotiation attempts (Astley et al., 1982). What is actually decided may be far from a rational solution, but rather the result of alliance formation, political manoeuvring and power differentials.

The present research attempted to approach several behavioural-political aspects of decision processes by using a number of seven - point scales measuring:

1. degree of *disagreement on the proper solution* (Eisenhardt and Bourgeois, 1988),

2. degree of *disagreement on the methodology* to find a solution (Butler et al. 1991),

3. degree of *disagreement on the objectives sought* by the decision (e.g. Butler et al. 1991).

4. degree of *negotiation* among participants (Astley et al. 1982; Cray et al. 1988; Lyles and Mitroff, 1980; Mintzberg et al. 1976; Pettigrew, 1973),

5. degree of *coalition formation* during the process. This measures the intrusion of divergent constellations of interests and the formation of various coalitions,

6. degree of *internal resistance* to the decision (Mintzberg et al. 1976),

Other Process Dimensions

Finally, the following process dimensions have also been measured

1. Dynamic factors: Such factors may include, among others, emergence of new unexpected options, managerial turnover, speedups, feedback delays, comprehension cycles etc. (Mintzberg et al. 1976). The present research measures the extent of *process interruptions* (what Astley et al. 1982 call 'discontinuities') encountered from various dynamic factors. The extent of process interruptions is measured on a seven-point scale ranging from T not all to '7' to a very great extent.

2. Gestation time: This is an important variable since it indicates the ability of a company to sense and act on strategic issues. Here, it is defined as the time elapsed between the first recognition (what Lyles 1981 calls 'creeping awareness') of a potential SID, to the first reference to a deliberate action (De Geus, 1988; Hickson et al. 1986). Lyles (1981) reported that in three-quarters of the companies in her sample, strategic issues remained at the 'incubation' period for more than a year, while in several cases the issue was present for more than five years prior to taking any action. Results show (table 3) that on average, the gestation process time lasted for 31 months (about 2.5 years).

3. Duration process time: This is of particular interest to writers in decision-making (e.g. Astley et al. 1982; Hickson et al. 1986; Mintzberg et al. 1976; Odiorne, 1986; Paine, 1987; Wally and Baum, 1994). Odiorne clearly

describes the process of slowing-down of decision-making when he says that" "hundreds of people may have a foot on the brake while only one or two can operate the accelerator" (Odiorne, 1986; pp. 34). We follow Eisenhardt (1989)and Hickson et al. (1986) and define duration process time as the number of months elapsed between the first reference to a deliberate action, to the time when a specific commitment to act was made.

4. Number of alternatives simultaneously considered by management in making the decision (e.g. Fahey, 1981; Langley, 1990). Despite their important role in decision-making, there is enough evidence to support the allegation that usually no more than four alternatives are examined, and in most cases only one alternative is subjected to in-depth analysis (Mintzberg et al. 1976). Indeed, managers usually draw ideas from their repertoire of experience, are 'blinded' by a built-in tendency to look at existing ways of doing things, and usually retrieve a limited number of alternatives.

Results-Factor Analysis

Table 3 presents the descriptive statistics of the 30 variables used to describe strategic DMPs. Undoubtedly, they provide a detailed categorisation of strategic DMP dimensions. In an attempt to achieve parsimony and with the aim to reveal common patterns among them, all the aforementioned variables are factor analyzed. Factor analysis serves to identify the important qualitative distinctions in the data and provides a means of reducing the large number of variables. Table 4 presents the results of factor analysis. Results reveal the existence of nine meaningful factors (scree test also corroborates these findings) describing different dimensions of strategic DMPs.

Several methodological precautions were seriously considered when conducting the factor analysis. First, all the factor loadings are well above the criterion established by Kim and Mueller (1978), (which is +/-0.46), thus strengthening our confidence in the resulting factors. The model itself appears to be particularly strong, by explaining 78.6% of the total variance. Despite this, for verification reasons, an oblique rotation factor analysis was also conducted (Stewart, 1981). The extracted factors were identical irrespective of rotation method. Factor loadings were also very similar, further supporting the initial nine factors obtained.

Variable	Variable name used by SPSS	Mean	STD DEV
Comprehensiveness in Diagnosis	(comdiag)	3.17	.82
Comprehensiveness in Alternative Generation	(comgen)	3.19	.81
Comprehensiveness in Alternative Evaluation	(comeva)	3.45	.81
Comprehensiveness in Making the Final Decision	(comdeci)	3.23	.87
Comprehensiveness in Integrating the Decision	(cominte)	3.25	.73
Hierarchical Decentralization in Diagnosis	(hdecdiag)	2.75	.66
Hierarchical Decentralization in Alternative generation	(hdecgen)	2.57	.61
Hierarchical Decentralization in Alternative Evaluation	(hdeceva)	2.74	.59
Hierarchical Decentralization in Final Decision	(hdecdeci)	2.90	.60
Hierarchical Decentralization in Integration	(hdecinte)	2.91	.59
Lateral Communication in Diagnosis	(ddecdiag)	2.10	.60
Lateral Communication in Alternative Generation	(ddecgen)	2.00	.54
Lateral Communication in Evaluation	(ddeceva)	2.21	.57
Lateral Communication in Decision	(ddecdeci)	2.20	.71
Lateral Communication in Integration	(ddecinte)	2.51	.80
Reporting on Alternative Ways of Action	(repor1*)	.00	1.00
Financial Reporting	(repor2*)	-.00	1.00
Set of Formalized Rules to be Followed	(forma1*)	-.00	1.00
Formalized Ways to Exchange Ideas	(forma2*)	-.00	1.00
Formal Co-ordination Devices	(forma3*)	-.00	1.00
Coalition Formation	(coalitio)	3.30	1.88
Scope of Negotiation	(negotiat)	3.03	1.87
Internal Resistance	(resist1)	2.04	1.46
Duration Gestation Time	(gestatio)	30.99	28.9
Duration Process Time	(sdmptime)	11.09	13.8
Disagreement on Appropriate Solution	(agresolu)	2.90	1.82
Disagreement on Methodology to be Followed	(methodol)	2.71	1.71
Disagreement on the Objective Sought by SID	(agrpurpo)	1.90	1.28
Number of Alternatives	(nraltern)	3.40	.97
Extend of Proces Interruptions	(interrup)	3.50	1.73

	FACTOR LOADINGS:*								
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
PROCESS CHARACTE-RISTICS	RATIONA-LITY/CO-MPREHE-NSIVENES	HIERAR-CHICAL DECENTRA-LIZATION	LATERAL COMMUNI-CATION	POLITICI-ZATION	PROBLEM SOLVING DISSENSION	DURATION OF THE PROCESS	SET OF FORMALI-ZED RULES	FORMAL COORDINA-TION DEVICES	FINANCIAL REPORTING
COMINTE	.83330		.27937						
COMEVA	.83300								
COMDIAG	.82939								
COMDECI	.82809	.25025							
COMGEN	.82547								
FORMA2	72966							-.32808	
HDECEVA		.89253							
HDECDECI		.85729							
HDECGEN		.83189							
HDECINTE		.82111							-.27962
HDECDIAG		.80520							
DDECGEN	.27704	.30057	.80804						
DDECEVA	.38688		.71727						
NRALTERN			.65480	.27703			.26182		
DDECDECI	.45358	.32487	.64945						
DDECDIAG	.44337		.47559			-.29443			.34289
COALITIO				.86088					
NEGOTIAT				.75021					
RESISTI				.73912					
AGRPUPRO					.87716				
METHODOL					.74850		-34099		
AGRESOLU			.26457		.69463			-2.5167	
SDMPTIME						.77502			

	FACTOR LOADINGS:*								
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
PROCESS CHARACTE-RISTICS	RATIONA-LITY/CO-MPREHE-NSIVENES	HIERAR-CHICAL DECENTRA-LIZATION	LATERAL COMMUNI-CATION	POLITICI-ZATION	PROBLEM SOLVING DISSENSION	DURATION OF THE PROCESS	SET OF FORMALI-ZED RULES	FORMAL COORDINA-TION DEVICES	FINANCIAL REPORTING
GESTATIO						.68402	-.28679	-.40541	
INTERRUP				.44243		.56257			
FORMA1							.74946		
REPOR1	.37961		.31055	.32035	-.27016		.54946		
FORMA3								.81266	
REPOR2	.42252								.61560
DDECINTE	.39544		.43180						.54685
EIGENVALUE	9.26	3.13	2.70	2.03	1.74	1.34	1.23	1.11	1.01
PCT OF VAR	30.9	10.4	9.0	6.8	5.8	4.5	4.1	3.7	3.4
CUM PCT	30.9	41.3	50.3	57.1	62.9	67.4	71.5	75.2	78.6

Our confidence in the factors that were derived is very high for the following additional reasons: (i) the sampling error has been minimised by collecting a sample approaching 45% of the total population (Dess and Beard, 1984), (ii) the factor structure of table 4 is in accord with existing theory, and (iii) the model showed remarkable stability of results when several variables were dropped and re-entered, proving that results tend to behave in a consistent way.

Interpretation of Results-Discussion

Each of the dimensions resulting in table 4 was given a specific name indicating the meaning of the variables loading on that factor. **Factor one,** incorporates six variables measuring *rationality/comprehensiveness* of the five stages in the process, plus extent of formalised ways to exchange ideas. It is the main factor, accounting for 30.9% of the total variance explained.

More specifically, five out of the six variables loading on **factor one** measure rationality-comprehensiveness for a particular stage in the DMP. Following Fredrickson (1984), we created a composite construct measuring overall comprehensiveness /rationality by summing the five comprehensiveness variables and averaging.

In **factor two** all five variables measuring *hierarchical decentralisation* load highly. Factor two is treated as a composite variable. **Factor three** incorporates four out of the five variables measuring the degree of *lateral communication* plus the variable measuring the number of alternatives taken into account. It explains 9% of the variance and measures the degree of lateral communication. The appearance of the variable number of alternatives taken into consideration on this factor may indicate the role and importance of various departments, or functional areas in contributing to strategic decision-making by proposing specific alternative ways of action. Indeed, if we adopt the view of Astley et al. (1982), on the existence of local perspectives within the organisation, then this "matching" reinforces the view that various 'local perspectives' and 'views of the world' stemming from functional areas are reconciled during the strategic DMP.

Factor three is transformed into a composite variable by summing the five variables measuring lateral communication and averaging.

In the **fourth factor** three variables load highly. They measure the extend of coalition formation, the degree of negotiation that took place among

major participants and finally the degree of internal resistance encountered. If we accept the definition of Hickson et al. (1986 pp. 59) that politicality is *"the degree to which influence is exerted through a decision-making process upon the outcome",* then we should also accept that the delicate tension maintained between various stockholders becomes more acute when negotiations among participants take place, coalitions are formed to support different views or internal resistance is explicated with the aim to influence the outcome of the decision-making process. Thus, factor four is interpreted as measuring degree of *politicisation.*

Factor five incorporates three variables indicating *problem-solving disagreement/dissension.* The rational-normative strategic management literature as well as the incremental-political perspective posits the importance of consensus, considering it among the major dimensions of strategy formulation and strategic decision-making. Often, strategic decision-making is seen as a consensus-building process, and Japanese management style considers consensus building as a key element (Ouchi, 1981). The three items comprising the construct (i.e. disagreement on the objectives sought by the decision, on the proper methodology to follow and on the proper solution to the problem) more or less refer to the early stages of the decision process, where ideas are exchanged, opinions are expressed and the first seeds of a subsequent political process are planted. This explains the moderately high and positive correlation coefficient revealed between the resulting dissension and politicisation factors (table 5). It appears that in cases where problem-solving dissension occurs at the early stages of the DMP, one expects the whole process to experience high politicisation.

It will be seen that **factor six** incorporates the two variables measuring the *duration of the process,* i.e. duration of gestation time and duration of process time, as well as the variable measuring the extent of process interruptions. This is particularly meaningful since duration is dependent on process interruptions. Together the two duration variables measure the time-length of the process from the initial awareness of an emerging SID to the end of the process. In translating factor six into a composite variable only the first two variables are added. Despite its importance, the third variable (dynamic factors-process interruptions) cannot be validly summed to the other two, since it is measured on a seven-point interval scale. It may be argued that it belongs more to the 'politicisation' factor (since it also loads highly on this factor).

The **seventh factor** incorporates two variables measuring the existence of a set of *formalised rules* to be followed and the extend of *reporting on alternative ways of action* (which again, can be seen as a type of formality). Only one variable loads on **factor eight.** This variable explains 3.7% of the total variance and measures the extent of existence of *formal co-ordination devices,* which are an integral part of the organisational structure (Miller, 1987). Finally, **factor nine** is explained as the extent of *financial reporting* (use of financial techniques) during the making of the SID.

In summary, the factor analysis model resulted in a number of meaningful and independent factors showing a remarkable consistency of relating variables loading on the same factor. Factor loadings for each separate factor are very high, thus enhancing the reliability of the final model.

Table 5 presents some summary statistics of the process variables that were finally computed, together with their Cronbach Alpha reliability coefficients, and correlation coefficients. It is worth noting that reliability coefficients are very high, thus strengthening our confidence in the dimensions that were derived. Reliability levels especially for the rationality construct are higher than those achieved by Fredrickson and other researchers (e.g. Fredrickson, 1984; Smith et al. 1988). Furthermore, despite the fact that the variables finally resulted, tap aspects of the same phenomenon (i.e. the strategic DMP) as is evident in table 5, they do not have unduly high correlation coefficients. Most of the process dimensions experience weak or moderately high correlation coefficients, all of which are in the expected direction.

Theoretical support for the resulting nine-factor model is provided by Camillus (1982). He developed a framework for reconciling the logical incrementalism and rational/synoptic schools of thought, and argued that three dimensions (the analytical, the interactive and the temporal dimension) adequately describe strategic processes. The analytical dimension of strategic processes is adequately captured in this study by the constructs of rationality/ comprehensiveness, financial reporting, set of formalised rules and formal co-ordination devices. Camillus' interactive dimension is captured by the constructs of hierarchical decentralisation, lateral communication, politicisation and problem-solving dissension. Finally, elements of what Camillus (1982) characterises as the temporal dimension are captured by the duration and gestation process time dimension (duration).

	MEAN	S.D.	ALPHA	1	2	3	4	5	6	7	8	9
1. Rationality/Comprehensiveness (RATIONAL)	3.26	.73	.9389	1.00								
2. Financial Reporting a (REPOR2)	-.00	1.00	.9004	.46***	1.00							
3. Set of Formalized Rules Followed (FORMA1) a	-.00	1.00	.8928	.28**	.19	1.00						
Rules Followed (FORMA1)												
4. Formal Co-ordination a Devices (FORMA3)	-.00	1.00	.8831	.32**	.19	-.00	1.00					
5. Hierarchical Decentralization (HIERDECE)	2.77	.54	.9268	.42***	.35**	.01	.34**	1.00				
6. Lateral Communication (DEPADECE)	2.23	.56	.8738	.62***	.35***	.27*	.45***	.54***	1.00			
7. Politicisation (POLITICI)	2.97	1.34	.7684	.31**	.10	-.11	.25*	.14	.07	1.00		
8. Problem-Solving Dissension (DISSENSU)	2.50	1.27	.7134	-.01	-.12	-.14	-.00	.01	-.08	.27*	1.00	
9. Gestation and Duration Process Time (TIMING2)	42.07	35.48	N.A.	.10	.14	-.22*	-.09	.02	-.05	.19	.04	1.00
			(objective)									

The nine-dimensional framework adopted is also similar to that of Cray et al. (1988). Indeed, the scrutiny dimension is captured by the rationality/ comprehensiveness and financial reporting dimensions, the interaction dimension is captured by the politicisation and problem-solving dissension dimensions, the centrality dimension is similar to our hierarchical decentralisation and lateral communication dimensions, and finally the duration dimension is captured by both studies.

Proposing a Holistic Framework for Future Research

Bearing in mind the renewed interest in process research, along with the increased awareness of the critical interrelationships between context, process, and output issues (e.g. Hart and Banbury, 1994; Papadakis and Barwise, 1998b; Rajagopalan et al. 1998), the present research offered an empirical framework for identifying and measuring strategic DMP dimensions. In addition, it argued that strategic DMPs are not simply a matter of identifying and evaluating alternatives, since several different dimensions may adequately describe the process, and empirically derived nine distinct dimensions which could adequately depict any strategic DMP.

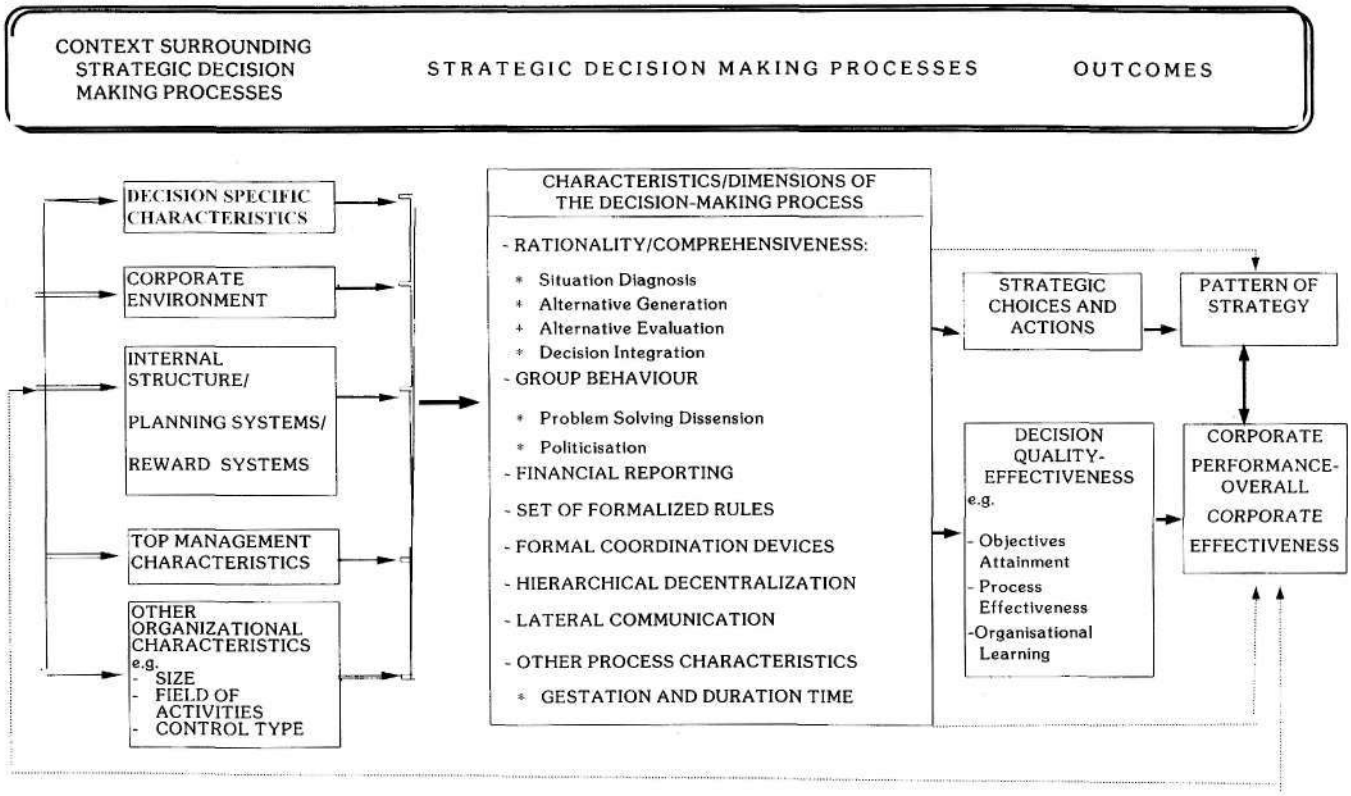
Figure 1, adopts this decision-based view and advances an integrated model of strategic decision-making. The process of making strategic decisions is depicted in the centre of the model, and its dimensions could be those suggested in the present paper. On the left-handside of figure 1 we can see all the hypothesised contextual domains affecting the way strategic decisions are shaped. These may belong to the following categories

1. *decision-specific characteristics* e.g. magnitude of impact, threat/crisis, frequency (Dutton et al. 1989; Hickson et al. 1986; Schneider and DeMeyer, 1991).

2. *characteristics of the external corporate environment* e.g. heterogeneity, dynamism, hostility, uncertainty (Miller 1987; Grinyer et al. 1986).

3. *characteristics of the internal corporate environment* i.e. internal structure, reward systems, planning systems (e.g. Marsh et al. 1988).

4. *top management characteristics and personality,* e.g. CEO need for achievement, tolerance of ambiguity, education, top management team's aggressive philosophy, top management team's level of education, (Hambrick, 1981; Fredrickson and Iaquinto, 1989).


CONTEXT SURROUNDING STRATEGIC DECISION MAKING PROCESSES
STRATEGIC DECISION MAKING PROCESSES
OUTCOMES
DECISION SPECIFIC CHARACTERISTICS
CORPORATE ENVIRONMENT
INTERNAL STRUCTURE/
PLANNING SYSTEMS/
REWARD SYSTEMS
TOP MANAGEMENT CHARACTERISTICS
OTHER ORGANIZATIONAL CHARACTERISTICS
e.g.
- SIZE
- FIELD OF ACTIVITIES
- CONTROL TYPE
CHARACTERISTICS/DIMENSIONS OF THE DECISION-MAKING PROCESS
- RATIONALITY/COMPREHENSIVENESS:
* Situation Diagnosis
* Alternative Generation
* Alternative Evaluation
* Decision Integration
- GROUP BEHAVIOUR
* Problem Solving Dissension
* Politicisation
- FINANCIAL REPORTING
- SET OF FORMALIZED RULES
- FORMAL COORDINATION DEVICES
- HIERARCHICAL DECENTRALIZATION
- LATERAL COMMUNICATION
- OTHER PROCESS CHARACTERISTICS
* GESTATION AND DURATION TIME
STRATEGIC CHOICES AND ACTIONS
PATTERN OF STRATEGY
DECISION QUALITY-EFFECTIVENESS
e.g.
- Objectives Attainment
- Process Effectiveness
-Organisational Learning
CORPORATE PERFORMANCE-OVERALL CORPORATE EFFECTIVENESS

5. *Other company characteristics* e.g. size, field of activity, ownership (Fredrickson, 1984; Fredrickson and Iaquinto, 1989; Hickson et al. 1986).

Exhorting the importance of these contextual domains, as noted in previous sections, it has been recognised that there is a need for integrative research, which explicitly takes into account and assesses the impact of context on strategic processes. However, as we argued before, with few exceptions empirical research attempting to quantitatively assess the influence of context on strategic DMP dimensions is thin. Rajagopalan et al. (1998, pp 240) argue that "a comprehensive theory of strategic decision processes should provide an understanding of the relative influence of each... sets of antecedents on the characteristics of the strategic DMP".

Finally, recently, Papadakis and Barwise (1998, pp 291) argue that "we are not yet able to answer the question what are the key influences on the process of making SDs?". The authors attribute this to a number of reasons the most important of which are: (i) The little research on the influence of broader context on SDM, (ii) the fact that most of the studies focus on a limited number of antecedents while ignoring other important sources of influence on SDM (model underspecification), (iii) that most of the studies focus on just one characteristic of the process (eg comprehensiveness, politics, decentralisation), despite the fact that SDM is multidimensional, and (iv)that much of the evidence is contradictory and far from establishing a coherent theory.

The nine-dimensional decision-based perspective advanced in this paper is arguably a good starting point in the attempt to address these research questions.

Turning our attention to the right hand-side of figure 1, we may see that strategic DMP dimensions directly and/or indirectly bear on the strategic choices and actions, the quality effectiveness of the final decisions taken (e.g. Butler et al. 1993; Dean and Sharfman, 1996), organisational learning (De Geus, 1988; Marsh et al. 1988), corporate performance/effectiveness (e.g. Fredrickson and Mitchell, 1984; Eisenhardt 1989), and the realised strategy of the firm (e.g. Cray et al. 1988; Narayanan and Fahey 1982; Stein 1981). On this basis, it seems that much attention should be devoted to how these strategic decisions are made, and the extent to which the dimensions of the process shape decision outcomes in terms of performance,

decision quality, organisational learning and corporate strategy (Sharfman and Dean, 1998).

Putting the proposed Holistic Framework into Practice: the Case of CHEMCO

What follows is an actual situation that was encountered by the management of one of the biggest chemical companies in Greece in the beginning of the 90s (to preserve anonymity we will call it CHEMCO). In this short case study we focus on the impact of decision specific characteristics on the process and outcomes of SDs. We show that the categorisation of an issue (as a crisis, opportunity or threat) within a company determines subsequent responses and shapes the process through which the organisation arrives at a decision (Papadakis et al. 1999).

CHEMCO received an unexpected letter from Athens Water Authority (W.A.). This was warning the company that because of the water shortage and the coming summer period, the W.A. was seriously considering seizing the supply of water to the factory. Management perceived the situation as a crisis. At the time the company was covering all its water needs from only one supplier, W.A. The company has not built a desalination unit of its own, similar to the ones existing at some of the other rival companies. If this threat materialised, it would mean that the whole plant had to stop its operations with subsequent dire consequences for production capacity, employement levels, maintenance of machinery etc. The whole company was engaged in finding a solution to the problem. A number of alternatives were investigated. Some were readily implemented, others required major capital investment.

However, before any final investment decision was made, the crisis seemed to ease somehow. Heavy rainfalls moved away the possibility that there would be no water for the thousands of households in Athens. In the meantime the managers involved in the DMP never stopped questioning their own decision. Interestingly, they now looked at the decision as a potential opportunity for significant cost reduction and autonomy enhancement, and approached it with a quite different mindset.

What is important to note, for the purpose of this paper, is that the characteristics of the processes followed in these two situations differed significantly. When people looked at the decision as a crisis they employed

procedural rational processes, generated multiple alternatives, eliminated political debates, showed a team spirit, and speeded up the process considerably. Yet their acts although seemingly rational were influenced by a short-term view. When the crisis relaxed people re-evaluated the situation and looked at it as an opportunity. This resulted in broader involvement, a general questioning attitude, more rational analysis and in-depth financial reporting of a limited number of solutions. On the other hand, some political activity also emerged.

This single incident lends partial support to our holistic model, by verifying that the characteristics of the decision itself influence the characteristics of the process followed.

It also bears some additional implications for practice. For example, it suggests that top managers should pay particular attention to the manner in which strategic issues are perceived and labelled within the company and its systems. In some instances, top management may choose to 'manipulate' the information provided from external or internal systems to serve its own goals.

The above case also indicates that the characteristics of the decision non only influence the processes followed, but have another, potentially more interesting impact on the outcomes of the decision. CHEMCO out of the crisis gained significant **organisational learning** both at an individual and at an organisational level. This occurred because the crisis forced managers think out of the box and generate new ideas and alternatives they have never thought of.

Concluding Remarks

A multi-dimensional decision-oriented perspective, like the one proposed above, can be of value in addressing a number of research questions. Moreover, it can be used as a basis for research trying to integrate process, context and output at the same time. This empirical foundation of strategic DMPs aims to draw attention to the use of the SD as the basic unit of analysis, and to advance the search for a common "vocabulary" of what is meant by strategic DMP dimensions.

A number of benefits could stem from adopting this 'decision-based view'. *First*, such an approach of assigning generic dimensions frees the study from being tied to single case narratives and synthesises the character

of the process comparatively. *Second,* such a framework operationalises the decision-based view of strategy. According to this, strategy is a 'system' whose elements are strategic decisions and thus, each strategic decision, to some extent, directly or indirectly influences organisational strategy (Cray et al. 1988; Shirley, 1982; Stein, 1981).

Finally, among the practical benefits of this framework is that it draws our attention to the notion of **capability** to make strategic decisions. Considering the accelerating internationalisation of markets and the fact that strategic behaviour is not static, and cannot be defined once and forever, great emphasis should be placed on the **capability** of companies to formulate strategies, and the respective strategic decision-making processes they follow, Rumelt et al. (1991, pp. 22) argue for a shift in both theoretical and empirical strategy research from the study of product-market positions or tactics to the investigation of internal organisational capabilities. Recently, it has been empirically supported (e.g. Hart and Banbury, 1994) that the process of strategic decision-making may hold the potential for building a competitive advantage. According to this view, successful firms are those which could effectively combine high levels of competence in multiple modes of strategy making e.g. coexistance of rational/analytical power/behavioural modes in their strategic decision-making processes. This reinforces our argument that particular attention should be devoted to, not only the processes through which SDs emerge and proceed, but also to their consequences for corporate performance/effectiveness (e.g. what are the trade-offs between rationality, formalisation, participation, politics, timing etc. in the pursuit of superior performance). The nine-dimensional framework proposed here aims at stimulating such a research agenda.

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