# THE CONTEXT OF DECISION
# MAKING IN ORGANIZATIONS:
## A FACTOR ANALYSIS

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## ABSTRACT

Because modern organizations address a variety of problems in their increasingly complex and interdependent environments, managers must be capable of identifying structures and processes that support effective decision making under many different circumstances. This research has employed the critical incident technique with a sample of 371 organization practitioners and MBA students to empirically derive six factors, represented by 32 items, which impact the effectiveness of decision making in work organizations. The factors are: Multiple Inputs and Alternatives, Problem Identification and Organization, Rewards for Good Decisions, Use of Group Efforts, Bureaucratic Blocks & Politics, and Resource Adequacy.

It is impossible to segregate the tasks of decision making and leadership in business organizations. Though researchers have often viewed decision making as a concrete, measurable science and leadership as an abstract, charismatic art, these two aspects of business management are irrevocably intertwined in the modern manager's arsenal of skills. Decision making has historically been recognized as one of the major functions of the executive (Barnard, 1938). In fact, deciding has been proposed by Simon (1977) to be synonymous with the practice of management. Empirical studies have provided evidence that decision making represents one of a manager's most common work roles (Mintzberg, 1973; Van de Ven, 1973).

In addition to their personal involvement in a few selected decisions, however, managers establish the context, consisting of decision structures and processes, in which other organization members make the overwhelming majority of daily operational decisions that significantly affect the firm's performance. This research addresses the environment in which those many operational decisions are made in work organizations. Vital features of this decision making environment are empirically identified through factor analysis and an assessment instrument is developed to measure those contextual features through the use of a psychometric instrument. Implications for better management of the organizational decision making environment are discussed as well as ideas for future research.

## LITERATURE

Numerous researchers discuss how the future environment in which organizations will function will be highlighted by rapid technology turnover and multiple interdependencies among environmental elements, making business decision making even more complex than it is at present. Labels describing the unique circumstances of this impending environment have included the post-industrial society (Bell, 1973; Huber, 1984), the information society (Masuda, 1980), and the third wave (Toffler, 1980). Drucker (1980) observed that turbulence will become the hallmark of the future and that a manager's foremost task will involve quick adaption to ensure the organization's survival. Successful businesses must be capable of

surviving a blow, adapting to sudden change, and availing themselves of new, suddenly occurring opportunities (Cameron, 1986). Increasing complexity in business environments will necessitate improving the internal decision making environment for all organizational participants. Kilmann (1984) stresses the need for current and future managers to understand the spectrum of individual, group, and organizational factors which affect a firm's morale and performance and to appreciate their complex interdependencies, and in so doing, resist "quick fixes" which contribute little to increased organizational effectiveness.

While many concepts and theories involving individual and group decision making have been proposed, those appropriate in organizational contexts remain in most part unverified and unapplied toward the improvement of our understanding and management of organizational decision making (Bass, 1983). Yet success in many businesses is a consequence of broad organizational decision processes, not the result of isolated, individual decisions. The resurgence of Chrysler from the brink of bankruptcy, for example, is not the result of any expert's single enlightened decision. Rather, it is attributable to the institutionalization of appropriate decision structures and processes that ensure overall corporate objectives are being addressed by the thousands (or millions) of daily decisions made by employees.

Bass (1983) states that the few previous attempts to empirically investigate organizational decision processes have been hampered by an overdependence on existing theory and by a concentration on the descriptions of departures from optimality. To avoid such problems this research empirically identifies factors which contribute to effective organizational decision making through a measurement process suggested by Loevinger (1967). Her concept of construct validity will be presented in brief to frame a discussion of the steps taken in the study, the end product of which is a psychometric instrument, named the Organization Team Survey (OTS), which is a means of assessing the degree to which factors pertinent to the context of organizational decision making are present.

## THE ASSESSMENT FRAMEWORK

Loevinger (1967) advances three components of construct validity which she claims are "mutually exclusive, exhaustive of the possible

lines of evidence for construct validity, and mandatory." The components—substantive, structural, and external validity—correspond to three stages of instrument construction:

1. compilation of a pool of items potentially useful for the instrument (substantive validity);
2. analysis of item interrelationships and the selection of a final set of items (structural validity); and
3. correlation of scores with other test scores or nontest behaviors (external validity).

The first two components relate to what is commonly called internal validity while the third is often referred to directly as external validity.

Loevinger claims these three ideas have a common foundation which binds the instrument development effort into one systematic approach - the consistent reliance on the investigator's "theory of the trait" to guide all methodological decisions. The researcher's theory must consistently and coherently drive the definition of variables, item composition, evaluation of structural properties, and development of evidence for external validity.

### Substantive Validity

To compose an initial pool of items to encompass the construct of organizational decision making, a frequently used general model (e.g., see Gibson, Ivancevich, & Donnelly, 1985) of the decision process was adopted (see the left side of Table 1). The model includes the establishment of objectives, identification of problems which are the differences between desired and actual outcomes, development of alternatives for problem correction, evaluation and choice among alternatives, implementation of the choice, and establishment of control mechanisms.

Literature relevant to each category of this multi-step, cyclical process model was reviewed and potential items for the assessment instrument were collected. This literature included a variety of previous approaches including both technical (systematic and rational approaches to decision making) and human (behavioral) approaches since the authors believe both aspects of organizational activity significantly influence the decision process. Table 1 delineates

*Table 1.* A Categorization of Decision-related Literature

| The General Decision-Making Process | Technical Systems | Human Systems |
|---|---|---|
| Establish specific goals and measure results | Strategic Planning, EDP/MIS, Environment Scanning | Goal Setting, Power, Conflict, Politics, Risk-Taking |
| Identify problems | | |
| | Philosophy of Science, Inquiring Systems: Hegelian, Lockean | Organization Development: Trust, Openness, Honesty, Information Sharing, Communication, Group Process, Consensus Development |
| Develop alternatives | | |
| Evaluate alternatives and choose | MS/OR, Optimization Techniques, Decision Support Systems | |
| Implement the choice | Technical Validity | Organizational Validity, Commitment, Participation |
| Control and evaluate | Formal Reward Systems, Organization Structure, Accounting & Management Control Systems | Informal Reward Systems, Authority, Communications, Organization Culture |

the major research areas reviewed and how they were classified in the framework.

Business practitioners were used as another source of items which affect the outcomes of decisions in organizational environments. Forty-two different respondents considered sixty-seven problems in which they had been recently involved and identified factors which led to their effective or ineffective outcomes.

Finally, five existing assessment instruments which address the topics of organizational effectiveness, group problem solving, and team-building were reviewed to cross-check the items generated through the first two steps and to supplement the item pool as necessary. The assessment instruments were:

- Survey of Organizations (Rensis Likert Associates, 1980)
- Profile of Group Problem Solving (Rensis Likert Associates, 1980)
- Phases of Integrated Problem Solving (Sashkin & Morris, 1985)
- What Makes Your Team Tick? (Mumma, 1984)
- How is Your Team Working? (Glaser & Glaser, 1984)

## Structural Validity

Structural validity involves the extent to which the format of the test and the calculation of scores is consistent with the theory of the trait. Since the organizational processes or attributes represented by questionnaire items may be present in varying degrees in organizational decision situations, Likert-type summated scaling was considered most appropriate for this measurement instrument.

This type of scale has been commonly employed to study various aspects of the organizational sciences since it has proven highly reliable for measuring the intensity of attitudes concerning test items. Nunnally (1978) suggests summative scales have a number of advantages over other scaling methods because they follow an appealing and simple model, are easy to construct, are usually high in reliability, can be easily adapted to measure a variety of attitudes, and have produced meaningful results in many studies.

Since the Organization Team Survey was developed as an assessment of the intensity of members' attitudes concerning current decision processes and structures in their organization, the adoption of Likert scaling matches the researchers' theory of the trait.

## External Validity

Establishment of external validity is the most demanding test of the usefulness of a measurement instrument. It requires an ongoing process involving application of the measure in a variety of settings and the comparison of results with other constructs that are expected to be both related and unrelated. Such evidence must be accumulated over time and in many different situations. Early tests of external validity, however, have been supportive. Scores generated by the Organization Team Survey have exhibited expected correlations with goal accomplishment, efficiency, and decision maker satisfaction and

have produced statistically significant differences between decisions judged by their participants as effective and ineffective (Boone, 1987).

## THE INSTRUMENT DEVELOPMENT PROCESS

A total of 70 items were written and considered by the authors to be independent enough to constitute the initial item pool which represented the construct of organizational decision making. These items were randomized and included in a questionnaire which was pilot tested and shortened to a 35-item instrument through factor analysis.

This shortened questionnaire was presented to 371 managers, non-managers, and MBA students who had work experience in a variety of fields and at many different hierarchical levels. Each respondent was asked to consider one work-related decision in which he or she was recently involved and to provide a brief written description of the situation. Decisions made alone or with others were acceptable as were ones that had been successful or unsuccessful.

After describing the particular work-related decision they would keep in mind while completing the questionnaire, respondents were instructed to read the 35 items and indicate the degree to which they agreed or disagreed with each on a 7-point Likert scale (1 - Strongly Disagree, 4 - Neutral, 7 - Strongly Agree) or to indicate the item was not applicable to their situation. This scaling made possible the factor analysis of responses via Pearson intercorrelations. Space was provided at the end of the questionnaire for participants to describe other factors they felt may have affected the outcome of their decision. This was done as a final check on the completeness of items included on the questionnaire and did not result in the identification of any new items.

## SIX FACTORS IDENTIFIED

The first step in analyzing the internal structure of the construct was to perform varimax factor rotated factor analysis on the 371 responses to each of the 35 items. The Statistical Package for the Social Sciences (SPSS) was utilized for this purpose. Six factors were identified and named based on the content of their items:

- Multiple Inputs and Alternatives
- Problem Identification and Organization
- Rewards for Good Decisions
- Use of Group Efforts
- Bureaucratic Blocks and Politics
- Resource Adequacy

Three of the original 35 items did not load on any of the six factors and were discarded, leaving 32 items on the final form of the assessment instrument.

Listed in Table 2 are the six factors and the items which comprise them. Table 3 contains the factor loadings. A primary criterion used to identify these factors was the internal consistency of the items as measured by Cronbach's alpha which estimates reliability based on the average correlation among items and the number of items and, according to Nunnally (1978), is a good means of estimating reliability since the major source of measurement error is the sampling of content.

Alpha values for each of the six factors are shown in Table 2 and range from 0.62 - 0.72, averaging 0.67. These values are considered quite satisfactory for this type of questionnaire (Nunnally, 1978; Van de Ven & Ferry, 1980). The negative values associated with a few items in Table 3 indicate those items have been stated in a negative manner and their scores must be reversed on the seven point Likert scale before they are summed as part of the overall factor score.

*Table 2.*    Factors and Their Associated Items

| Factor | Item # | Item | alpha |
|--------|--------|------|-------|
| MULTIPLE INPUTS & ALTERNATIVES | 3 | Decision makers want to hear different points of view. | .68 |
| | 4 | Management provides enough support to carry out decisions. | |
| | 14 | Decision makers appreciate and take advantage of each others' differences, strengths, and unique capabilities. | |
| | 19 | Organization members are encouraged to try new ideas. | |
| | 23 | Information about problems is obtained from many different sources. | |

## Table 2. Continued

| Factor | Item # | Item | alpha |
|--------|--------|------|-------|
| | 27 | Decision makers are willing to take some risks. | |
| | 28 | Organization members feel free to disagree with management. | |
| | 31 | Many possible solutions to problems are generated and considered. | |
| PROBLEM IDENTIFICATION & ORGANIZATION | 5 | People involved in decisions make sure they identify the real problem. | .69 |
| | 6 | It is easy to get things done because decision makers know who is in charge and who to ask for help. | |
| | 7 | People working on problems have the skills needed to solve them. | |
| | 10 | Decision makers have access to relevant information from all parts of the organization. | |
| | 24 | Information about problems is accurate. | |
| | 26 | Clear objectives are set for decisions. | |
| REWARDS FOR GOOD DECISIONS | 2 | People who offer good ideas are fairly rewarded. | .63 |
| | 9 | People who make good decisions receive the rewards they deserve. | |
| | 13 | This organization has good ways to measure the performance of its members. | |
| | 16 | The reward system is designed to benefit members who solve the organization's problems. | |
| | 22 | Adequate rewards are provided to encourage members to offer new ideas. | |
| USE OF GROUP EFFORTS | 12 | One or a few people dominate decisions in this organization | .62 |
| | 15 | Decisions are usually made by individuals, not teams of people. | |
| | 21 | This organization often uses special groups like project teams, task forces, matrix groups, and collateral groups to address problems. | |
| | 29 | People are encouraged to discuss problems with other organization members when making decisions. | |
| | 30 | There are a few powerful people in this organization who always influence decisions. | |
| | 32 | Important decisions are usually made by upper management only. | |

*Table 2.    Continued*

| Factor | Item # | Item | alpha |
|---|---|---|---|
| BUREAU-CRATIC BLOCKS & POLITICS | 8 | There is a lot of "red tape" to go through before anything can be accomplished. | .72 |
| | 18 | There are too many policies and procedures controlling decisions. | |
| | 20 | Changes are usually opposed because they cost too much. | |
| | 25 | There is a lot of political activity when decisions are made. | |
| RESOURCE ADEQUACY | 1 | Decision makers have adequate access to equipment like calculators, computers, telephones, etc. to allow them to do good work. | .67 |
| | 11 | The equipment (calculators, computers, video and conferencing systems, etc.) used to aid decision making in this organization works reliably. | |
| | 17 | There are not enough physical resources such as computing equipment, office space, communication systems, etc. to support good decision making. | |

# DISCUSSION

The two most interesting results of the questionnaire development process involved the loading on just two factors, Multiple Inputs and Alternatives and Problem Identification and Organization, of many of the concepts other researchers indicate in their theoretical models to be a series of related but separate steps in the decision process and, secondly, the identification of several factors which relate to the non-rational aspects of decision making in organizations.

Items comprising the factors labeled Multiple Inputs and Alternatives and Problem Identification and Organization include numerous fundamental principles of good management such as the establishment of clear objectives by management, provision of management support to facilitate decision implementation, establishment of recognizable and effective lines of communication and authority, and assignment of individuals with relevant skills and knowledge to decision making tasks.

*Table 3.* Factor Loadings

| Item # | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 |
|---|---|---|---|---|---|---|
| 3 | .52 | | | | | |
| 4 | .46 | | | | | |
| 14 | .49 | | | | | |
| 19 | .50 | | | | | |
| 23 | .42 | | | | | |
| 27 | .65 | | | | | |
| 28 | .49 | | | | | |
| 31 | .62 | | | | | |
| 5 | | .71 | | | | |
| 6 | | .68 | | | | |
| 7 | | .54 | | | | |
| 10 | | .51 | | | | |
| 24 | | .68 | | | | |
| 26 | | .52 | | | | |
| 2 | | | .89 | | | |
| 9 | | | .66 | | | |
| 13 | | | .51 | | | |
| 16 | | | .65 | | | |
| 22 | | | .70 | | | |
| 12 | | | | −.58 | | |
| 15 | | | | −.58 | | |
| 21 | | | | .26 | | |
| 29 | | | | .50 | | |
| 30 | | | | −.59 | | |
| 32 | | | | −.51 | | |
| 8 | | | | | .63 | |
| 18 | | | | | .61 | |
| 20 | | | | | .31 | |
| 25 | | | | | .53 | |
| 1 | | | | | | .55 |
| 11 | | | | | | .43 |
| 17 | | | | | | −.63 |

The loading of such items on just two factors indicates a recognition by respondents that there are underlying associations among these items. They do not occur as a series of events in organizational settings but rather intercorrelate highly enough to be considered two factors that exist in one degree or another in decision

making situations. The results of this study, therefore, suggest that in practice many of the seemingly separate steps previous researchers propose to make up the organizational decision process are so closely interrelated that they cannot be considered independent. For example, managers should consider their establishment of objectives, identification of problems, establishment of authority, and distribution of accurate information such closely linked practices that they must all be planned and carried out in a consistent manner if they wish to establish a coherent approach to handling organizational decisions.

Another interesting, yet expected, result of this questionnaire development involved the identification of several non-rational, behaviorally-based factors which comprise the practice of decision making in organizations. Among such factors were attitudes concerning the existence of bureaucratic blocks and politics in the organization, the usefulness of soliciting and using viewpoints of others concerning a problem and the inclusion of others in the decision process, and the association between rewards (raises, promotions, recognition, etc.) and the introduction of new ideas. Relationships among individuals and groups in organizations should be analyzed along these dimensions, not just the cookbook-like steps of collecting information and applying an appropriate algorithm to identify an optimal solution, if decision making within functioning organizations is to be understood and managed.

## FUTURE RESEARCH

This research has provided as assessment instrument that can be used by researchers to reliably measure important features of an organization's decision making environment. The degree to which such features are present or absent can be related to measures of effectiveness, efficiency, satisfaction, and other outcome measures of organizational decisions. These relationships, in turn, can produce additional understanding of this central aspect of organizational activity and serve to test the external validity of the Organization Team Survey.

Also, the differential effects each of these factors has on decision effectiveness *depending on the type of encountered problem* may constitute an interesting and potentially fruitful line of research. For

example, several of the factors identified in this study may explain the variance in decision effectiveness for well-structured problems while different factors may impact the outcomes of problems that are semi-structured or ill-structured.

From a practitioner-oriented perspective, managers may need to be more aware of the important effects they exert on all organizational decisions through the environment they create for such activities. This environment includes at a minimum the six factors identified in this research. Managers may benefit by considering the balance of skills and resources their employees need to effectively handle the problems they constantly address.

Effectiveness will best be achieved in the daily decision making activities that impact the organization's eventual success or failure when employees possess both the technological and behavioral tools necessary to excel at each of the numerous factors impacting the decision process. One-dimensional approaches such as the installation of data processing equipment, the introduction of training in conflict-handling techniques, or the establishment of Management-by-Objectives programs are not sufficient substitutes for management's appreciation of the need to develop a complete package of structures and processes which form an environment conducive to the development of effective decisions.

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