Alternative Forms of Fit in Contingency Theory

Robert Drazin and Andrew H. Van de Ven

This paper examines the selection, interaction, and systems approaches to fit in structural contingency theory. These are empirically examined as related to a task-contingency theory of work-unit design in 629 employment security units in California and Wisconsin. Evidence was found to support the selection and systems approaches in these data but not the interaction approach. The generalizability of these findings is discussed in terms of using alternative approaches to fit to explain context-structure-performance relationships in contingency theory.•

Structural contingency theory has dominated the study of organizational design and performance during the past twenty years. However, despite its favorable status, contingency theory is continually being called into question because of its apparent inability to resolve persistent theoretical and empirical problems. The recent commentaries on contingency theory (Schoonhoven, 1981; Mohr, 1982; Tosi and Slocum, 1984; Fry and Schellenberg, 1984; Van de Ven and Drazin, 1985) all suggest that basic changes in theory and methodology are needed. Ironically, management researchers have recently proposed theories that are, at their core, even more complex and unresolved systems of contingency propositions; for example, the McKinsey 7-S framework (Pascale and Athos, 1981), Theory Z (Ouchi, 1981), the eight characteristics that fit together in excellent companies (Peters and Waterman, 1982), and expansions of Leavitt's diamond model for designing innovative organizations and for organizing the stages of growth of new ventures (Galbraith, 1982).

All these models share in common an underlying premise that context and structure must somehow fit together if the organization is to perform well. Despite the critical role that this concept of fit plays, few studies have carefully examined its implications (Schoonhoven, 1981; Fry and Schellenberg, 1984; Van de Ven and Drazin, 1985). Instead, it appears that our concepts of fit are drawn from a general and often implicit pool of domain assumptions and methodological conventions.

As Dubin (1976) stated, every theory is a contingency theory, because for a proposition or "law of interaction" to hold, assumptions must be made about starting premises, boundaries, and system states. Boundary conditions specify the ranges over which a relationship is expected to hold, and system states specify the temporal period and other conditions under which the relationships hypothesized by a theory are expected to occur.

A contingency theory differs from other theories in the specific form of the propositions. The distinction between congruent and contingent propositions made by Fry and Schellenberg (1984) clarifies this difference. In a congruent proposition a simple unconditional association is hypothesized to exist among variables in the model; for example, the greater the task uncertainty, the more complex the structure. A contingent proposition is more complex, because a conditional association of two or more independent variables with a dependent outcome is hypothesized and directly subjected to an empirical test; for example, task uncertainty interacts with structural

0001-8392/85/3004-0514/$1.00.

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Support for this research was provided in part by the Wisconsin Job Service Division of the Department of Industry, Labor and Human Relations, the California Employment Department, and by the Program on Organizational Effectiveness of the Office of Naval Research under the contract number N00014-S4-K-0016.

complexity to affect performance. Central to a structural contingency theory is the proposition that the structure and process of an organization must fit its context (characteristics of the organization's culture, environment, technology, size, or task), if it is to survive or be effective. In Dubin's terms, the "law of interaction" in a contingency theory is that organizational performance depends on the fit between organization context and structure and process — given that normal assumptions hold about the premises, boundaries, and system states derived from the theory.

The key concept in a contingent proposition is fit, and the definition of fit that is adopted is central to the development of the theory, to the collection of data, and to the statistical analysis of the proposition. Van de Ven and Drazin (1985) indicated that in the development of contingency theory, at least three different conceptual approaches to fit have emerged — the selection, interaction, and systems approaches (Table 1) — and each significantly alters the essential meaning of a contingency theory and the expected em-

Table 1

Interpretation of Fit in the Selection, Interaction, and Systems Approaches to Structural Contingency Theory

Views, definitions, and test methods	Selection	Interaction	Systems
Initial Views			
Definition	*Assumption:* Fit is assumed premise underlying a congruence between context and structure.	*Bivariate interaction:* Fit is the interaction of pairs of organizational context-structure factors; it affects performance.	*Consistency analysis:* Fit is the internal consistency of multiple contingencies and multiple structural characteristics; it affects performance characteristics.
Test methods	Correlation or regression coefficients of context (e.g., environment, technology, or size) on structure (e.g., configuration, formalization, centralization) should be significant.	Context-structure interaction terms in MANOVA or regression equations on performance should be significant.	Deviations from ideal-type designs should result in lower performance. The source of the deviation (in consistency) originates in conflicting contingencies.
Current-Future Views			
Definition	*Macro selection:* Fit at micro-level is by natural or managerial selection at macro-level of organizations.	*Residual analysis:* Fit is conformance to a linear relationship of context and design. Low performance is the result of deviations from this relationship.	*Equifinality:* Fit is a feasible set of equally effective, internally consistent patterns of organizational context and structure.
Test methods	Variables subject to universal switching rules should be highly correlated with context. Particularistic variables should show lower correlations.	Residuals of context-structure relations regressed on performance should be significant.	Relationship among latent context, structure, and performance constructs should be significant, while observed manifest characteristics need not be.

pirical results. These three different approaches to fit are presented and then examined empirically in this paper. We believe that they clarify much of the confusion in the literature on structural contingency theory and provide alternative directions to further the development of contingency theories in general.

SELECTION, INTERACTION, AND SYSTEMS APPROACHES TO FIT

Selection Approach

Many early structural contingency theories were in fact congruence theories because they simply hypothesized that organizational context (whether environment, technology, or size) was related to structure (centralization, formalization, complexity) without examining whether this context-structure relationship affected performance. For example, using a variety of technology dimensions, many researchers have hypothesized and found strong relationships between technology and structure (1) at the organization level (Perrow, 1967; Hage and Aiken, 1969; Freeman, 1973; Dewar and Hage, 1978), (2) at the work-unit level (Hall, 1962; Fullan, 1970; Van de Ven and Delbecq, 1974; Tushman, 1977; Marsh and Mannari, 1981), and (3) across levels of organizational analyses (Comstock and Scott, 1977; Nightingale and Toulouse, 1977; Pierce, Dunham, and Blackburn, 1979; Fry, 1982). Many of these studies had an implicit feedback logic underlying the reason for the association between context and structure. However, none of these studies discussed or presented evidence on the effect of the congruence between technology and structure on organizational perfomance.

It is unclear whether to conclude that this research did not address contingency theory or to conclude that contingency theory operated as an untested assumption underlying this organization context-structure research. For example, most technology researchers in the 1960s and 1970s used a contingency theory logic similar to that of Woodward (1965) and Perrow (1967), but they simply did not test for the link with performance — either because they did not collect measures of performance or because they were not interested in this key part of the theory.

Recently, however, natural selection and managerial selection perspectives have surfaced and provide some justification for viewing fit as a basic assumption underlying congruence propositions between organizational context and structure and process. In the natural selection argument, fit is the result of an evolutionary process of adaptation that ensures that only the best-performing organizations survive (Hannan and Freeman, 1977; Aldrich, 1979; Comstock and Schroger, 1979; McKelvey, 1982). An equilibrium between environment and organization is assumed to exist, at least over long periods of time, and only context-structure relationships need to be examined to assess fit (Fennell, 1980), because an identity, or isomorphic relationship, between context and structure, is presumed to exist for the surviving organizations (DiMaggio and Powell, 1983).

The managerial selection argument extends this approach and takes into account macro- and micro-levels of organization design (Van de Ven and Drazin, 1985). Most organizations (or subunits) are constrained in choosing or adopting the structural patterns that reflect their particular circumstances. No matter what level of organization is examined, there is usually a more macro-level that imposes, at least in part, uniform practices and prescriptions on the more micro-level (DiMaggio and Powell, 1983). For example, government legislative bodies regulate industries, industries have codes that constrain businesses, and organizations have policies that impose uniformities on departments, divisions, and work units.

Macro-rules tend to be imposed on micro-units in two ways: (1) uniformly without regard for the contexts of subunits to which they apply, and (2) situationally, through a set of switching rules that take contextual factors into consideration. Switching rules are more interesting to contingency theorists, because they affect the fit between structure and context the most. They function as guidelines or prescriptions for managers, enabling them to adjust structure to new contingencies.

Organizations limit the discretion of subunits by adopting a set of switching rules, or contingency programs, that prescribe different designs for different types of subunits. For example, routine production units in an organization are normally structured in a systematized mode, service units in a discretionary mode, and R&D units in a developmental mode (Van de Ven and Delbecq, 1974). Structure and process variables that are not prescribed at the macro-level are left to the particularistic control of the subunit. Only these variables should interact with context to explain variations in performance.

Future developments of the selection approach to fit in contingency theories may yield promising results if multiple levels of organizational analysis are taken into account. This requires bracketing into two groups structure and process variables that are (1) established at the macro-level and (2) particularistic at the micro-level. For the first grouping of variables, fit is analyzed as a congruence relationship between context and structure and process; for the second group, fit might be analyzed as a contingency relationship, using the interaction approach.

Interaction Approach

A second interpretation of fit is that it is an interaction effect of the context and structure of an organization on performance — much like the classic studies of the interaction of sun, rain, and soil nutrients on crop yields (Van de Ven, 1979). The focus here is not so much on understanding the congruence between context and structure as in the selection approach, but rather on explaining variations in organizational performance from the interaction of organizational structure and context. For example, Figure 1 shows a typical interaction hypothesis of environmental heterogeneity and structural complexity on organizational performance. This interaction hypothesis is based on Ashby's (1956) concept of requisite variety, in which organizational adaptability is enhanced when the degree of complexity present in the environment is reflected in the structure of the organization.

Mixed results have been obtained for this common and popular approach to fit. Correlational studies have shown that the relationships between structure and context are stronger for

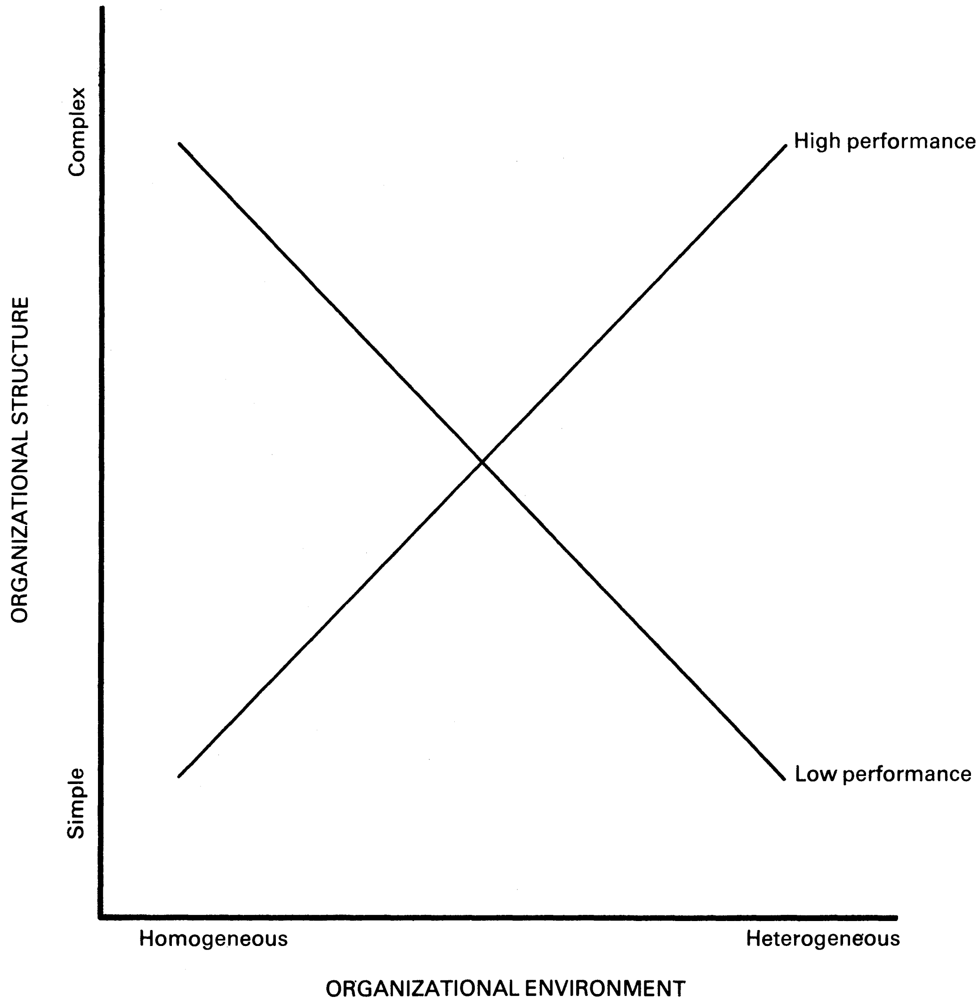

Figure 1. Example of typical interaction hypothesis of environmental heterogeneity and structural complexity on performance.

higher performing organizations than for lower performing organizations, but often the differences are small and not significant (Negandi and Reimann, 1972; Child, 1974; Khandwalla, 1974; Van de Ven and Ferry, 1980). In studies of interaction effects (Mohr, 1971; Pennings, 1975; Tushman, 1977, 1978, 1979; Van de Ven and Drazin, 1978; Schoonhoven, 1981), only the Tushman and Schoonhoven studies provided support for the interaction hypothesis.

These mixed results may be due to many methodological problems of researchers attempting to model interactions from field survey data. Correlations among structure and context make it difficult to decompose and assess the effects of interactions versus the effects of intercorrelations (Green, 1978). Classification errors often arise from procedures that dichotomize or polychotomize variables that have been measured on a continuous basis for the purpose of creating ANOVA classes (Pierce, Dunham, and Blackburn, 1979). Significant interaction terms may result solely from the scale of measurement of the dependent variable (Green, 1978). Also, as Schoonhoven (1981) pointed out, many researchers have not appropriately operationalized their concepts of fit. In particular, multiplicative interaction terms in regression analyses limit the form of the interaction only to acceleration and deceleration effects, which researchers have not specifically hypothesized in their concept of fit. Multiplicative interactions are usually correlated with the variables from which they are developed, causing multicollinearity problems in the analysis (Green, 1978; Schoonhoven, 1981; Fry and Slocum, 1984).

Several researchers have proposed a deviation-score approach for examining the interaction form of fit in contingency theory (Ferry, 1979; Dewar and Werbel, 1979; J. Miller, 1981; Fry and Slocum, 1984). Rather than looking for classical interaction effects, proponents of this approach have analyzed the impact of deviations in structure from an ideal context-structure model, in which fit is defined as adherence to a linear relationship between dimensions of context and structure. A lack of fit results from a deviation from that relationship (Alexander, 1964). This approach is consistent with an interaction approach; that is, only certain designs are expected to give high performance in a given context, and departures from such designs are expected to result in lower performance. The deviation-score approach and the interaction approach are similar only to the extent that they attempt to model the same underlying bivariate fit. Statistically, however, they are quite different. The interaction approach deals with acceleration and deceleration effects formally equivalent to the catalytic type found in chemistry. The deviation-score approach relies on the calculation of a matching variable and is the bivariate equivalent of the multivariate systems approach.[1]

Figure 2 displays this form of analysis graphically. Organization A, being further away from the ideal linear context-structure relationship than Organization B, is expected to have lower performance. This form of fit is examined statistically by correlating the absolute values of context-structure residuals with performance.

Systems Approach

Studies that adopt the selection and interaction definitions of fit tend to focus on how single contextual factors affect single structural characteristics and how these pairs of context and structure factors interact to explain performance. This reductionism treats the anatomy of an organization as being decomposable into elements that can be examined independently. The knowledge gained from each element can then be aggregated to understand the whole organizational system.

Recently, a systems approach to contingency theory has emerged, reacting against such reductionism. Advocates of this approach (D. Miller, 1981; Van de Ven and Drazin, 1985) assert that the understanding of context-structure performance relationships can only advance by addressing simultaneously the many contingencies, structural alternatives, and performance criteria that must be considered holistically to understand organization design. Unlike the selection and interaction approaches to fit, the systems approach consists of several novel alternative methods characterizing the patterns of interdependencies present in organizations.

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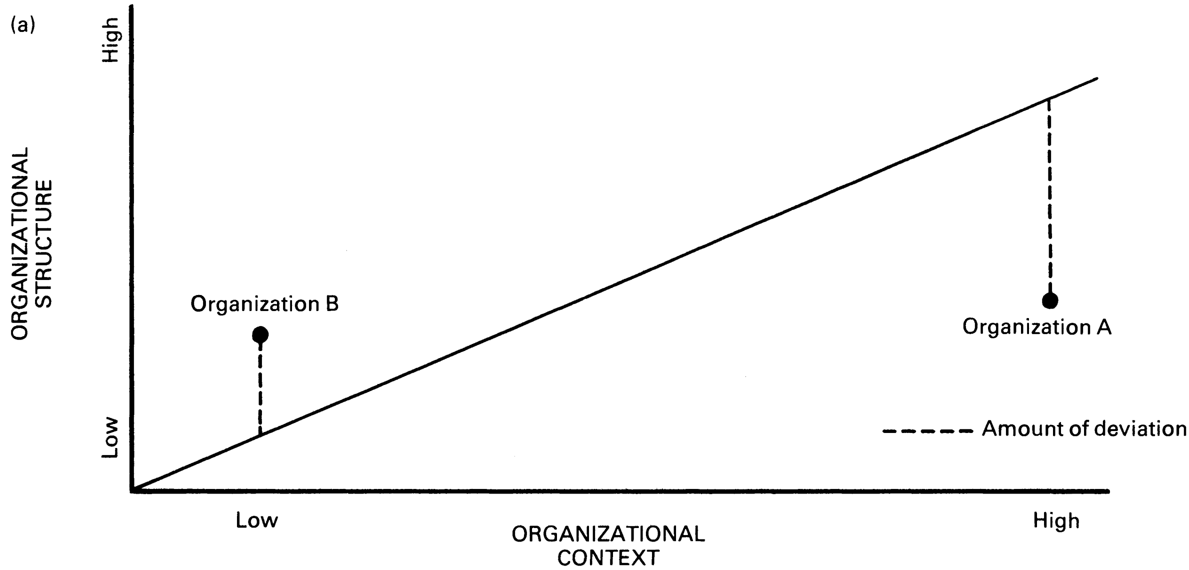
We are indebted to an anonymous *ASQ* reviewer for pointing out this statistical difference.



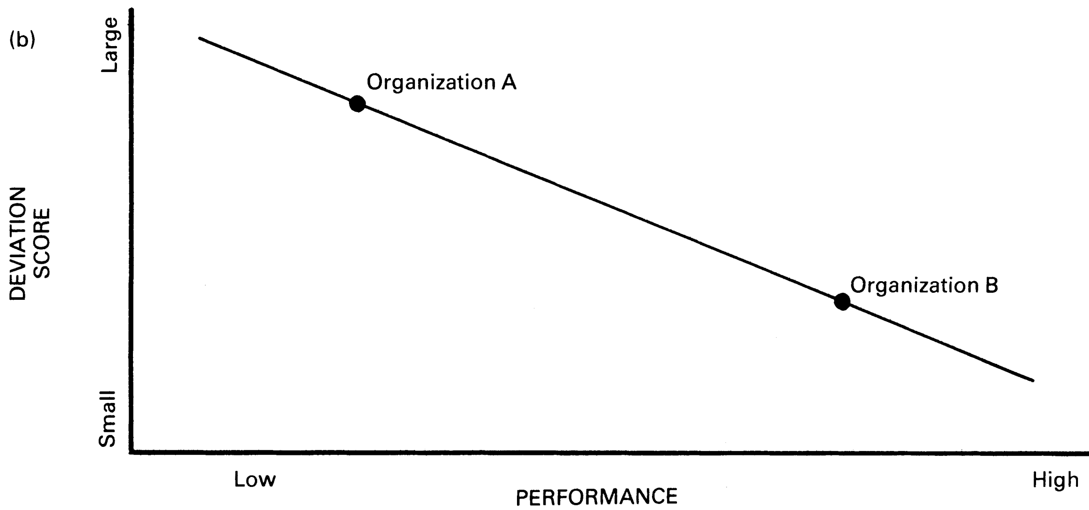


Figure 2. (a) Deviation of organizations A and B from context structure relationship; (b) Expected relationship between deviation scores (absolute values) and performance.

The systems approach emphasizes the need to adopt multivariate analysis to examine patterns of consistency among dimensions of organizational context, structure, and performance (D. Miller, 1981). Most recently, the systems approach has begun to incorporate the general systems theory concept of equifinality by interpreting fit as feasible sets of equally effective alternative designs, with each design internally consistent in its structural pattern and with each set matched to a configuration of contingencies facing the organization. However, because analytical procedures for examining equifinality in organizational design remain to be developed (Van de Ven and Drazin, 1985), only the pattern-analysis approach is discussed and examined in this paper.

Organizations operate in contexts of multiple and often conflicting contingencies, and theorists have had an ongoing debate about whether organization structure and process should be matched to the environment, size, or technology of the organization (Ford and Slocum, 1977). But, as Child (1977: 175) questioned, "What happens when a configuration of different contingencies is found, each having distinctive implications for organizational design?" Bivariate analysis of a given contextual factor with a structural characteristic cannot address this question. The organizational implications of each contingency are unlikely to be the same and are often in conflict with each other. As a result, trade-off decisions begin to emerge, and attempts to respond to multiple and conflicting contingencies are likely to create internal inconsistencies in the structural patterns of organizations. To address these problems, a pattern analysis is needed for the interactions of multiple contingencies and structural patterns on organizational performance.

For example, Child (1977: 175), addressing the design dilemma of a large organization facing a variable environment, asked: "Should it set a limit on its internal formalization in order to remain adaptable, or should it allow this to rise as a means of coping administratively with the internal complexity that tends to accompany large scale?" Child, in his study of manufacturing firms (1975) and airlines (1977), found that high-performing organizations had structures that were internally consistent, while the low-performing organizations were inconsistent. He maintained that the inconsistent organizations adopted structures that attempted to respond to multiple contingencies, whereas the consistent organizations adopted structures matched to a single contingency.

Similarly, Khandwalla (1973) showed that internal consistency among structural variables — defined as the gestalt of the organization — was positively related to organizational performance. The systems frameworks of various authors (Alexander, 1964; Gerwin, 1976; Galbraith, 1977; Nadler and Tushman, 1980; Van de Ven and Ferry, 1980) all hypothesized that consistency among organizational design characteristics led to performance. However, they did not develop analytical procedures to examine their hypotheses empirically. In the systems approach, fit results in a pattern of structure and process that matches the contextual setting and is internally consistent.

A system analysis approach to fit is graphically presented in Figure 3. For purposes of illustration, only one ideal type and two underlying dimensions of structure are shown, but the patterning involved could be easily extended to multiple ideal types or higher dimensionalities. Three hypothetical (A, B, C) organizations are plotted around the ideal type. In the systems approach, the more an organization deviates from the ideal type, the lower the expected performance. In Figure 3, the performance ordering is A, B, C, with Organization C having the lowest performance.

In summary, the systems approach maintains that two basic choices confront the organizational designer: (1) to select the organizational pattern of structure and process that matches the set of contingencies facing the firm, and (2) to develop structures and processes that are internally consistent. The tasks for theorists and researchers adopting the systems

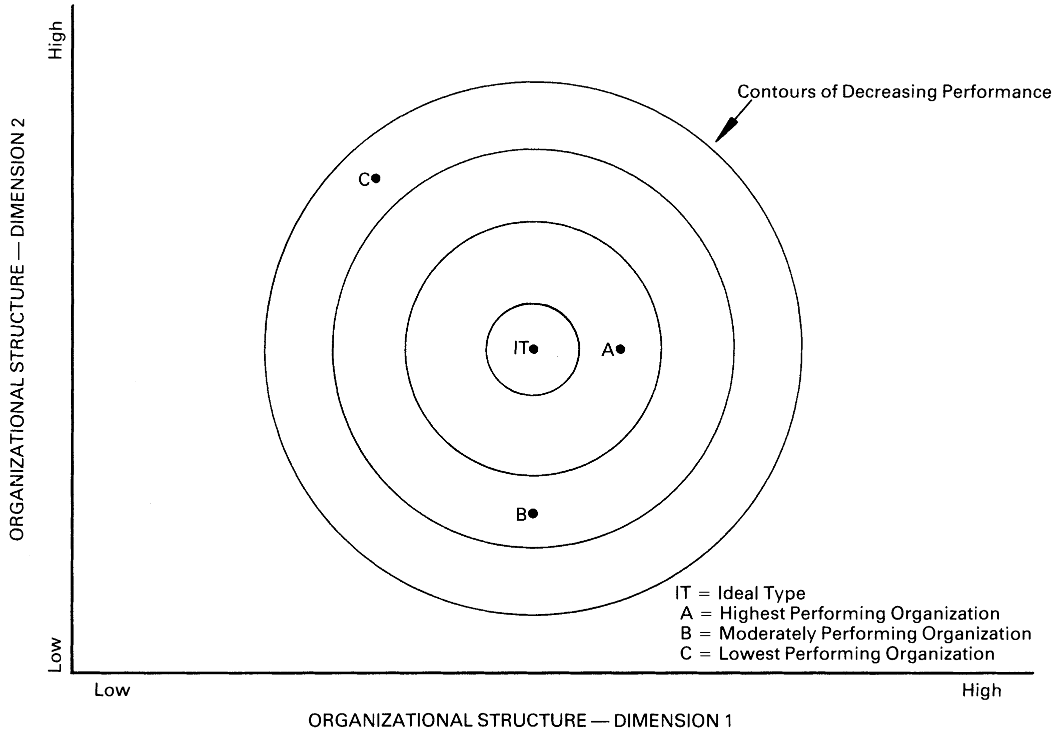


Figure 3. A graphic representation of the systems approach to fit: an ideal type organization and three organizations of different performance.

definition of fit are to identify the feasible set of organizational structures and processes that are effective for different context configurations and to understand which patterns of organizational structure and process are internally consistent and inconsistent.

Unique and Complementary Information

The three forms of fit presented in this paper are not mutually exclusive and can provide both unique and complementary information on the fit in a researcher's data. For example, the selection approach is useful for determining important context-structure relationships. When several contextual factors are correlated with the structural variables, it is possible that conflicting contingencies are present (Child, 1975). In this case, more complex systems tests for internal consistency, using the pattern approach, may be called for. Alternatively, a single contextual variable, strongly related to many organizational structure and process variables, indicates that ANOVA might not detect the effects of mismatches between context and structure on performance, and a deviation-score approach may be more appropriate.

The selection approach to fit might also be combined with the interaction approach by categorizing structure and process variables into two groups, those variables that are subject to macro-switching rules and those that are more particularistic and, hence, variable. Fit would be interpreted in two ways. First, as congruence, or isomorphism between those structure and process variables that are highly correlated with context, and, second, as an interaction form of fit for the particularistic variables.

A comparison of the results of the interaction and systems approaches to fit can also be illuminating. The interaction approach assumes that a disaggregated analysis of pairs of context-structure variables on performance is possible. It may be that such reductionism cannot detect effects of fit that are present at a holistic or gestalt level (D. Miller, 1981; Van de Ven and Drazin, 1985). Whenever the contingency theory in question is based, even remotely, on structural types, then interaction results should be compared with systems results. If the interaction results are not significant, but the systems results are, then it can be reasonably concluded that fit does not occur at the level of any individual variable alone but rather at the level of deviation from an overall pattern of several variables (Van de Ven and Drazin, 1985). By relying on the interaction approach alone one might erroneously conclude that contingency theory is not relevant (Pennings, 1975).

If the interaction approach does detect fit, but only among certain pairs of context-structure relationships, such findings would indicate that those context-structure boundaries are more salient predictors of performance than others (Khandwalla, 1973; D. Miller, 1981). Such findings would be of great practical utility, implying that limited resources should be allocated to the most critical context-structure relationships. An interaction approach can therefore supplement and further specify the findings of the more general systems approach (D. Miller, 1981).

Examining multiple approaches to fit in contingency studies and relating these findings to unique sample characteristics can help in the development of mid-range theories of fit. The forms of fit that hold at the work-unit or job-design level may be radically different from those found at the industry or population level. Similarly the nature of fit may be dependent on the size and maturity of the organizations under study (Aldrich, 1979) or the rate of change experienced by the organizations (D. Miller, 1981). By relating the pattern of context-structure-performance relationships to the unique characteristics of their sample, researchers can develop mid-range hypotheses about the nature of fit appropriate to their organizations. Then, by conducting crucial experiments (Stinchcombe, 1968) based on these a priori grounds, they can compare types of fit and extend our knowledge of contingency theory.

TASK-CONTINGENCY THEORY OF WORK-UNIT DESIGN

In this paper, empirical tests of the three approaches to fit are illustrated by focusing on a task-contingency theory of work-unit design and the associated data base formed to test that theory. The common data base allows one to compare unique and complementary information in the selection, interaction, and systems approaches to fit in one contingency theory. Moreover, an examination of these multiple forms of fit provides for a better understanding of the nature of fit in work units than would be possible using only one approach.

The three approaches to fit are compared by examining the task contingency model of work-unit design developed by Van de Ven and his colleagues (Van de Ven and Delbecq, 1974; Van de Ven, Delbecq, and Koenig, 1976; Van de Ven, 1976a, 1976b; Van de Ven and Drazin, 1978). This model has been extended and incorporated as a core part of the larger Organizational Assessment (OA) framework and instruments (Van de Ven and Ferry, 1980; Ferry, 1983). The OA research program aims to develop a conceptual framework and related measurement instruments for assessing the performance of jobs, work groups, interorganizational relationships, and organizations on the basis of how they are organized and the environments in which they operate. At the center of the OA research effort is a contingency theory of job, work-unit, and organizational design. Here we focus only on the OA task-contingency theory of work-unit design. A work-unit is defined as the smallest collective group in the organization; it consists of a supervisor and all personnel who report to that supervisor.

The OA task-contingency theory proposes that high-performing units that undertake work at low, medium, and high levels of task difficulty and task variability will adopt, respectively, systematized, discretionary, and developmental modes of structure and process. Here mode means a logically coherent pattern of structure and process matched to a level of task uncertainty. The structural elements of these modes are defined in terms of: (1) specialization, the number of different work activities performed by a unit; (2) standardization, the procedures and pacing rules that are followed in task performance; (3) discretion, the amount of work-related decision making that the supervisor and employees exercise; and (4) personnel expertise, the skills required of personnel to operate the program. Process is defined as the coordination mechanisms used by unit personnel who execute the program. Coordination consists of the frequency of oral and written communications, as well as the methods used to resolve conflict among unit personnel.

Table 2 shows the underlying pattern of structure and process dimensions that distinguish the systematized, discretionary, and developmental modes. The systematized mode is a program for efficiently organizing and managing repetitive tasks that are generally well understood. Work roles are specialized, highly codified, and standardized so that members with lower expertise, who do not exercise much discretion, can perform them effectively. Supervisors deal with problems and exceptions, and minimal coordination is required among unit members. The frequency of conflict is low because of low interdependence among unit members and resolution of conflict by appeal to authority or rules. Departures from this mode of operation that allow for greater employee discretion, less standardization, or greater interchangeability are expected to cause unnecessary and inefficient repetition of tasks, thereby reducing efficiency and increasing frustration and dissatisfaction.

The discretionary mode is a program for managing tasks that recur periodically but exhibit a sufficient number of variations and exceptions to require different methods, procedures, and adjustments for effective handling. The discretionary mode generally consists of a repertoire of alternative methods for dealing with tasks, problems, and issues. Guidelines are available to employees for choosing among these methods; that is, work is only partly codified and requires a greater level of expertise to accommodate the necessary decision making and

Table 2

Hypothesized Systematized, Discretionary, and Developmental Modes in Task-Contingency Model of Work-Unit Design*

Organizational characteristics	Task Uncertainty (difficulty and variability) Low (L) (Systematized)	Medium (M) (Discretionary)	High (H) (Developmental)
Unit structure			
Unit specialization	H	M	L
Unit standardization	H	M	L
Personnel expertise	L	M	H
Supervisory discretion	H	M	L
Employee discretion	L	M	H
Unit Processes			
Oral communication	L	M	H
Written communication	L	M	H
Frequency of conflict	L	M	H
Conflict resolution by			
Avoidance and smoothing	H	M	L
Authority	H	M	L
Confrontation	L	M	H
Performance†			
Job satisfaction	H/L	H/L	H/L
Unit efficiency	H/L	H/L	H/L

*Adapted from Van de Ven, 1976a.
†High based on pattern described; low based on other pattern.

information processing. As the number and difficulty of exceptions increases, more information flows between members of the unit and more interdependence develops. Unit members exchange ideas, problems, and solutions laterally in the course of dealing with the greater uncertainty. Levels of conflict and disagreement are higher, and mutual adjustment becomes more important in resolving them. The codification of the systematized mode would be ineffective in achieving goals in the discretionary mode; the nature of the work requires discretion and flexibility to adequately accommodate task variations. However, too much flexibility would reduce performance. The essence of the discretionary mode is the diagnosis and categorization of problems into known treatment and resolution alternatives; only occasionally are true invention and development necessary.

The developmental mode is a program for handling tasks, problems, or issues that are sufficiently difficult to require extensive search, evaluation, and judgment. Developmental structure and process are characterized by low levels of standardization and specialization, group decision making and problem solving, high employee discretion, and high levels of interdependence and communication. Whereas a discretionary program provides procedures, rules, and norms, a developmental program tends to provide only broad and difficult goals, and much effort is expended in developing unique strategies for achieving these goals.

Unit efficiency (output per person) and the average level of job satisfaction are hypothesized in the model presented here to be contingent upon the fit between the level of task uncertainty faced by the unit and the internal pattern or mode of structure and process the unit adopts. The selection, interaction, and systems approaches to fit are all appropriate methods for assessing the nature of fit relationships implied in this model. Each approach yields different information and is appropriate for testing certain relationships expected in this model.

Sample and Measurement Procedures

Data to test this contingency theory were obtained from 629 employment security units in 60 offices located in California and Wisconsin in 1975 and 1978. These units administered the Department of Labor's Job Services, Unemployment Insurance, Workman's Compensation, and Work Incentive programs at the local level. The following basic unit types were studied in the survey:

Intake and claims processing: Received, registered, and processed claims for unemployment compensation (UC).

Adjudication: Investigated, documented, and resolved disputed UC claims.

Placement: Matched unemployed individuals to job openings.

Counselling and rehabilitation: Advised clients in training for career objectives.

Work incentives: Provided intensive job services and employment development programs for individuals on welfare.

General services: Handled all other client and staff-related work.

Management and clerical: Provided support, including supervisory and secretarial services.

Detailed descriptions of each unit's work are available in Van de Ven and Ferry (1980).

With the exception of unit efficiency, all the dimensions in Table 2 were measured with the Organization Assessment Instrument (OAI), as developed and evaluated by Van de Ven and Ferry (1980). Questionnaires were completed by all unit members and supervisors during business hours after a member of the OA research team explained the purpose and use of the study. The data reported here are at the unit level and were derived from the responses of the unit supervisor and the average of all responses of the unit personnel reporting to that supervisor, equally weighted. This aggregation procedure is justified theoretically, because a work unit is defined as consisting of two hierarchically related positions, a supervisor and all employees reporting to that supervisor. When the empirical implications of this approach versus a simple averaging of the scores of all unit personnel were examined, they showed that mean scores and correlations among all variables were the same for both procedures (Van de Ven and Ferry, 1980). Measures of efficiency were obtained from organizational performance records for each unit and consisted of the amount of output produced per full-time equivalent position. Measures of unit size, office size, administrative intensity, and levels were obtained from organizational charts developed for each community office. Due to space limitations, readers are referred to Van de Ven and Ferry (1980) for details on questionnaire items

Table 3

Correlations among Unit Context, Structure, Process, and Performance Variables (*N* = 629)

	$\bar{X}$	SD	Coeff. Alpha	1	2	3	4	5	6
Unit context									
1. Task uncertainty	2.24	.54	.81						
2. Office size	4.20	1.64	NA†	.055					
3. Unit size	7.32	4.05	NA	–.088	.011				
4. Administrative intensity	.23	.15	NA	–.033	.439•••	.020			
5. No. levels from top	4.67	1.26	NA	–.275•••	.362•••	.040	.221•••		
Unit structure									
6. Unit specialization*	3.12	:95	.85	.121••	–.012	–.113•	–.016	–.178•••	
7. Unit standardization*	3.45	.73	.80	–.468•••	–.357•••	.085	–.122	.351•••	–.188•••
8. Personnel expertise*	2.96	.49	.40	.467•••	.010	–.120	–.062	–.190•••	–.096•
9. Supervisory discretion	2.98	.68	.81	–.096•	–.027	.067	–.043	.074	–.087•
10. Employee discretion	3.52	.74	.84	.194•••	–.042	–.117••	–.123	–.295•••	.157•
Unit process									
11. Written communication*	1.81	.45	.68	.300•••	.064	.079	–.123•	–.029	.095•
12. Oral communication	2.29	.52	.69	.334•••	–.203•••	–.047	–.128•	.219•••	–.129••
13. Frequency of conflict	2.11	.83	–	.135••	–.073	.174•••	–.023	–.158••	.058
14. Conflict resolution by:									
a. Avoidance and smoothing	2.29	.76	–	–.033	–.034	.099•	.022	–.029	–.043
b. Confrontation	3.36	.95	-	.057	–.045	–.132••	–.127•	–.004	–.008
c. Authority	2.73	.88	–	–.080	.006	.047	–.072	.115•	–.017
Unit performance									
15. Unit efficiency	4.88	.92	NA	–.023	–.243••	.095	–.206••	–.113	.007
16. Job satisfaction	4.99	1.00	.78	–.043	–.137•	.011	–.361•••	.062	.051

*Design characteristics prescribed at macro-level.
•$p < .05$, ••$p < .01$, •••$p < .001$.
†NA = Not applicable.

and the psychometric properties of the instrument. However, where relevant, reliabilities are reported in Table 3.

In the past, contingency studies have been criticized for lack of variation in the data, especially in the contingent variables (Pfeffer, 1982). To ensure that the data in this study showed adequate variation to test the task-contingency theory, median splits were performed on all variables, and the resultant mean differences were compared using *t*-tests.[2] Means for all variables (including task uncertainty) were significantly different at the $p < .001$ level. Task uncertainty scores ranged from a low of 1.09 to a high of 4.1, covering most of the five-point range of the component items of the task uncertainty scale. Means and standard deviations for all variables are shown in Table 3.

Selection Approach

The basic hypothesis in a natural selection approach to fit in the OA task-contingency theory is that task uncertainty should be a strong predictor of work-unit structure and process. As D. Miller (1981: 10) has pointed out, natural selection is a powerful Darwinistic force, which "imposes order on organizational forms and limits their variety and number." Forms or patterns that are dysfunctional are likely to be selected against, while more functional patterns will be propagated. Performance is notably absent in this hypothesis, because the selection approach assumes that structural forms must be adaptive to the environment, or the organizational unit will be selected out of existence. Under a natural selection view of fit, task uncertainty should be correlated strongly with all the structure and process variables of Table 2.

The selection process in a managerial selection approach is somewhat different. Relationships are presumed to exist be-

2

The authors thank an anonymous *ASQ* reviewer for suggesting this procedure.

7	8	9	10	11	12	13	14a	14b	14c	15
–.248•••										
.186•••	–.063									
–.162•••	.072	.335•••								
–.078	.215•••	.097•	.079							
.011	.291•••	.021	.069	.315•••						
–.099•	.050	.074	.039	–.004	.037					
–.017	.000	.041	.095•	–.081	–.029	.442•••				
–.024	–.004	–.027	.116•	.089•	.162•••	–.293•••	–.436•••			
–.086•	–.162••	.080	–.052	.036	.071	–.065	–.110	.348•••		
.013	.038	–.021	.113	.047	.117	–.071	–.118	.065	.064	
.181••	–.021	.038	.089•	.006	.120••	–.305•••	–.286•••	.339•••	.297•••	.214••

tween work units and the macro-organizations in which they are embedded. Management, through staff units, is expected to establish switching rules that control certain structural dimensions of different types of subunits. In this study, staff units in the headquarters office of the Employment Security Agencies, as well as the state-level Civil Service Departments, exerted strong influence over the structural characteristics of specialization, expertise, standardization, and written communications at the work-unit level. The level of a work unit's specialization and expertise was partly controlled through specific job descriptions and the civil service requirements (education, experience, etc.) associated with those descriptions. Standardization was also governed by switching rules imposed at the macro-level. Staff units developed and disseminated clerical and computer procedures, which were codified and documented in unit operations manuals. These same rules also set forth requirements for the number and degree of written communications related to documenting actions taken on clients and for periodic management information reports.

In the managerial selection approach, other structure and process characteristics, such as oral communications, level of conflict, conflict-resolution style, and employee or supervisory discretion are difficult if not impossible to control through the development of switching rules. These parameters should show a broader range of variance within unit type, reflecting the more particularistic style of unit leaders and personnel. Therefore, in managerial selection a strong correlation should exist only between task uncertainty and those structure and process variables capable of being programmed at the macro-level.

Table 3 presents a correlation matrix among the unit context, structure, process, and performance variables. The variables subject to macro-organizational switching rules are designated with an asterisk. The significant correlations with task uncertainty support the basic congruency hypothesis in OA theory. As task uncertainty increases, unit structure and process change to match this uncertainty. Specialization, personnel expertise, and employee discretion increase, while standardization and supervisory discretion decrease. Some aspects of unit process are also related to the level of task uncertainty. Written and oral communications increase with higher levels of task uncertainty as does the frequency of conflict, again, in accordance with OA theory. Only the style of conflict resolution is not related to task uncertainty.

Other contextual factors are correlated with unit structure and process as well, but not as strongly as task uncertainty. In particular, the size of a unit and the number of levels that it is removed from the top have a number of significant effects on the unit process dimensions — many of them in the opposite direction of the effect of task uncertainty.

A review of the correlations between task uncertainty and unit structure and process allows comparison of the natural and managerial selection hypotheses. Task uncertainty is significantly correlated with all the unit structure and process variables except the three styles of conflict resolution (which have small but significant correlations with other contextual factors). These findings support the natural selection hypothesis. However, Table 3 shows large differences in the sizes of the correlations. Three of the four dimensions hypothesized in the managerial selection model as subject to macro-organizational switching rules (unit standardization, personnel expertise, and written communications) are strongly correlated with task uncertainty. Unit specialization, while significant, has a substantially lower correlation with task uncertainty. The correlations of task uncertainty with the other unit structure and process variables are substanially lower than these four. Only oral communications is an exception. Overall, although the evidence provides some support for both natural and managerial selection theories of forms of fit in the OA task-contingency theory, more support is shown for the managerial selection perspective.

Interaction Approach Examined with ANOVA and Deviation Scores

Although the OA task-contingency theory of work-unit design is a theory of modes of behavior, it can also be thought of as a set of independent mini-theories of task-structure-process-performance relationships. This approach requires disaggregating the modal characteristics of the OA theory into its component structure and process variables and then analyzing the effects of the interactions of each of these variables with task uncertainty on performance. The advantage of this approach is that it provides accurate and useful details about individual structure and process variables (D. Miller, 1981). Its primary disadvantage is its implied reductionism. The reductionist approach may not capture the very gestalt character of organization that the theory implies.[3]

3

We are indebted to Michael Tushman for pointing out that certain contingency theories either focus theoretically only on one variable or measure organizations in such a way that gestalt characteristics are captured in one variable. In such cases there is no reductionism, and this disadvantage of the interaction approach is eliminated.

Forms of Fit

The most common approach to the interaction test of fit consists of a series of two-way analyses of variance (or regressions) with task uncertainty, individual unit structure and process variables, and interactions of task uncertainty with these dimensions, as the independent variables, and unit performance (efficiency and satisfaction) as the dependent variable. To conduct this test, task uncertainty was trichotomized into roughly equal categories representing low, medium, and high levels of task uncertainty. The eleven unit structure and process variables were dichotomized into low and high levels, based on frequency counts. Twenty-two separate ANOVAs were conducted, eleven each for unit efficiency and job satisfaction as dependent performance variables. Several alternatives were explored to ensure that the interaction approach was given an adequate testing, including using several polychotomizing schemes, and treating the data continuously, with multiplicative interaction terms. In all cases the results were essentially the same as those shown in Table 4. The Schoonhoven (1981) procedure would not be appropriate to explore here because only 4 out of 22 multiplicative interactions were significant.

Table 4 shows the results of the ANOVA tests for job satisfaction and unit efficiency. An examination of the interaction effects shows only one significant interaction effect (conflict resolution by authority x task uncertainty) that explains average unit satisfaction.

Table 4

Analysis of Variance of Task Uncertainty, Unit Structure and Process, and Interaction Effect for Efficiency (N = 230) and Job Satisfaction (N = 473).

Organizational characteristics	Task Uncertainty F	p	Structure and Process F	p	Interaction Effect F	p
Unit structure						
Unit specialization	.31	.733	2.59	.109	1.67	.189
	1.85	.158	.45	.500	2.23	.180
Unit standardization	.31	.734	1.00	.318	1.80	.168
	1.90	.151	12.50	.001	2.13	.121
Personnel expertise	.30	.738	.11	.735	.20	.819
	1.85	.157	4.47	.035	.91	.402
Supervisory discretion	.31	.736	.04	.843	1.02	.363
	1.86	.157	4.66	.031	.95	.387
Employee discretion	.31	.735	.40	.525	1.66	.192
	1.86	.158	1.48	.225	2.55	.079
Unit process						
Written communication	.31	.736	.84	.361	.54	.583
	1.84	.159	.04	.841	1.84	.159
Oral communication	.31	.736	.84	.361	.54	.583
	1.88	.154	8.67	.003	1.55	.212
Frequency of conflict	.30	.736	1.49	.224	.51	.604
	1.85	.160	28.40	.001	.45	.630
Conflict resolution by:						
Avoidance and smoothing	.30	.738	.47	.495	.09	.910
	1.95	.144	29.30	.001	.40	.667
Confrontation	.31	.737	.46	.496	.58	.560
	2.01	.135	45.73	.001	.14	.865
Authority	.31	.738	.47	.495	.09	.910
	1.99	.137	34.21	.001	3.90	.021

A second approach to testing the interaction form of fit in contingency theory is to compute deviations of residual scores from a regression line (Ferry, 1979; Dewar and Werbel, 1979; J. Miller, 1981; Fry and Slocum, 1984). A two-step procedure was followed to conduct this deviation-score test. First, deviation scores were constructed by regressing each unit structure and process dimension separately on task uncertainty. Residuals were calculated from the best-fitting least-squares lines. The absolute values of these residuals were used as deviation scores. The second step of the analysis was the actual test of fit. The eleven deviation scores developed were separately regressed on efficiency and satisfaction. If the correlations of the deviation scores with efficiency and satisfaction were significant and negative (the greater the deviation, the lower the performance) these data were taken as evidence of fit.

The results of the unit structure and process and task uncertainty regressions used to create the deviation scores are shown in Table 5. Because of the low correlations reported earlier for certain structure and process dimensions with task uncertainty, some beta values are quite close to zero, indicating that deviation scores should be interpreted as roughly equivalent to dispersion around the mean for these variables. The results of the actual tests of fit using the deviation scores calculated from the above regressions are also shown in Table 5.

Table 5

Regression Analysis of Unit Structure and Process on Task Uncertainty to Develop Deviation Scores and Correlations of These Scores with Job Satisfaction and Unit Efficiency

Organizational characteristics	Regression analysis (N = 471) Intercept	Beta	F	p	Correlation of Deviation Scores* Job satisfaction (N = 471)	Unit efficiency (N = 230)
Unit structure						
Unit specialization	5.496	–.176	5.01	.0260	.042	–.020
Unit standardization	4.714	–.561	98.01	.0001	–.035	–.053
Personnel expertise	1.754	.731	145.50	.0001	.010	–.050
Supervisory discretion	3.176	–.086	2.29	.1310	.005	–.173••
Employee discretion	3.022	.214	11.78	.0240	–.030	–.040
Unit process						
Written communication	.955	.351	47.94	.0001	.070	.054
Oral communication	1.706	.475	56.98	.0001	.106•	.052
Frequency of conflict	1.589	.236	9.16	.0026	–.078	–.033
Conflict resolution by:						
Avoidance and smoothing	2.439	–.067	.87	.3510	–.114•	–.089
Confrontation	3.112	.114	1.64	.2010	–.033	–.082
Authority	3.042	–.146	3.14	.0770	–.078	–.033

•$p < .05$, ••$p < .01$.
*Absolute values of task-structure residuals.

Of the 22 correlations, only four are significant at the .05 level. Deviations for oral communications are positively correlated with satisfaction — a result that is hard to interpret, given the expectation of a negative correlation. Three other correlations are significant and negative: conflict resolution by avoidance and smoothing with job satisfaction, supervisory decision making with unit efficiency, and conflict resolution by authority with unit efficiency. However, the correlations are weak, the highest one being only $-.18$. Since only 4 of the 22 possible relationships are significant, it is probable that they are due to chance alone (Hays, 1973, 1976). To be certain that these results were not caused by the choice of the base-line model, a second deviation-score procedure was tried. Here the base line was calculated using the 45 highest performing units that were chosen for the systems analysis. None of these 22 deviation scores correlated significantly with performance.

The results obtained using the ANOVA and deviation-score approaches to fit are discouraging to supporters of the interaction approach and in the past have led some researchers (Pennings, 1975) to question the overall relevance of structural contingency theory. However, since this form of fit is only one of the several that exist for contingency-theory analysis, perhaps it is the interaction approach, rather than contingency theory itself, that should be questioned.

Systems Approach

Conceptually, the systems approach is similar to deviation-score analysis. The major difference is that deviation is not measured from a single linear equation line, but rather as a distance from a profile described as a point in an eleven-dimension structure and process space. The deviation scores in the interaction approach analyzed the fit between task uncertainty and each of the unit structure and process characteristics, one dimension at a time. This systems analysis focused on differences in pattern profiles and accounted for all eleven variables as a set. A three-step procedure was used to analyze the systems approach to fit in this data base.

This theory, like most contingency theories, expresses the contingent relationships ordinally, not in ratio or interval scales. For example, standardization is presumed to be high for the systematized mode and low for the developmental mode. To test the pattern approach, empirical ideal types representing the three modes of the task-contingency theory were required. Empirical profiles were therefore generated for the 45 highest performing units, based on the efficiency measure, under conditions of low, medium, and high task uncertainty (15 units for each level of uncertainty). The mean scores of these 45 units on the 11 structure and process variables were considered as empirically derived ideal types, representing systematized, discretionary, and developmental modes. These ideal types were tested using ANOVA and MANOVA to determine if the profiles actually differed. A comparison was also made between these results and the theory shown in Table 2 to determine if the derived values matched the predicted ordinal relationships.

The results of the first step of the pattern analysis procedure are shown in Table 6, which shows the unit structure and process profiles of the 45 highest efficiency units under conditions of low, medium, and high task uncertainty. The *F* column shows the results of one-way ANOVAs to determine if the means of the profiles on each dimension were different. Eight of the eleven structure and process variables showed significant differences at the .10 level. An overall MANOVA, using all eleven variables, was also significant ($F = 2.94$; $p < .0004$).

Furthermore, the results of orthogonal planned comparisons (Hays, 1973), to assess which means differed, revealed that the mean scores of the structure and process variables of standardization, supervisory discretion, and written and oral communication differed between low, medium, and high task-uncertainty levels. Where differences were significant, the patterns of scores matched very closely the predicted patterns of Table 2. These profiles, then, appear to represent the systematized, discretionary, and developmental modes of the OA task-contingency theory.

Table 6

Profiles of Mean Unit Structure and Process Scores for High Efficient, Low, Medium, and High Task-Uncertainty Units*

Organizational characteristics	Task Uncertainty Low (N = 15)	Medium (N = 15)	High (N = 15)	ANOVA F	p	Orthogonal planned comparisons†
Unit structure						
Unit specialization	–.078	–.154	.257	7.22	.002	M,H
Unit standardization	.445	.085	–.477	12.95	.001	L,M,H
Personnel expertise	–.215	–.132	.343	3.99	.026	M,H
Supervisory discretion	.026	–.210	–.283	2.52	.093	L,M,H
Employee discretion	–.157	–.057	.201	1.94	.156	M,H
Unit process						
Written communication	–.337	.048	.214	4.02	.025	L,M,H
Oral communication	–.275	–.002	.228	3.01	.060	L,M,H
Frequency of conflict	–.141	–.101	.243	1.01	.375	–
Conflict resolution by:						
Avoidance and smoothing	–.150	.044	.067	.29	.751	–
Confrontation	.248	–.101	–.075	.11	.898	–
Authority	.399	–.252	–.005	3.36	.049	L,M

*Based on standardized scores.
†Significant ($p < .10$) differences in mean values; based on orthogonal planned comparisons, for low, medium, and high task-uncertainty units.

In the second step, differences between these ideal patterns and the patterns of the remaining units were calculated using a Eucledian distance metric. The resultant distance calculations are between a focal unit and its respective ideal type, according to the focal unit's level of task uncertainty. The distance measure is calculated as follows:

$$\text{DIST} = \sqrt{\Sigma\,(Xis - Xjs)^2},$$

where Xis is the score of the ideal unit on the sth structure or process dimension and where Xjs is the score of the jth focal unit on the sth dimension.

Based on the distances calculated for all units in the sample, a third step actually tested the pattern approach to contingency theory. The calculated distance measure was correlated with the two performance measures of satisfaction and efficiency. Fit, or perhaps more appropriately, misfit, would be demonstrated if the distance score was negatively correlated with the performance measures. The greater the distance from the respective ideal type, the lower the hypothesized performance.

The results of this analysis are shown in Table 7. As predicted, both unit efficiency and job satisfaction are negatively correlated with a unit's distance from its ideal-type profile. Efficiency correlated $-.241$ ($p < .001$) with overall distance (for all units except the original high-performing units used to calculate the ideal types), and satisfaction correlated $-.127$ ($p < .01$) with overall distance. Table 7 also shows the component correlations between distance and performance within low, medium, and high task-uncertainty levels. Low and high uncertainty units showed the greatest correlation between distance and efficiency ($r = -.308$ for low task-uncertainty units and $r = -.320$ for high-uncertainty units), while the distance-efficiency correlation was not significant for medium task-uncertainty units. For the satisfaction-dependent variable, distance was only significant for the low task-uncertainty units ($r = -.194$).

Table 7

Correlations of Distance Measure with Unit Efficiency and Job Satisfaction, Excluding High-Performance Units

Distance	Unit Efficiency	N	Job Satisfaction	N
All units	–.241••	185	–.127•••	438
Task uncertainty units				
Low	–.308••	54	–.194••	137
Medium	–.093•	76	–.091•	173
High	–.320••	55	–.101•	128

•Not significant; ••$p < .02$; •••$p < .001$.

These results show significant support for the systems approach to fit in the OA task-contingency theory of work-unit modes. Departures from the ideal systematized, discretionary, and developmental modes at each level of task uncertainty were found to influence significantly unit efficiency and satisfaction.

DISCUSSION AND IMPLICATIONS

It is clear, first, that managerial selection, operating through macro-organizational switching rules that are contingent on task uncertainty, has a significant influence on the structural characteristics of subunits. For those variables subject to prescription at a higher level in the organization, significant correlations were found between context and structure and process. However, certain process characteristics of subunits appear to be less influenced by these macro-organizational switching rules and tend to reflect the particularistic style and discretion of unit personnel. With the exception of Comstock and Scott (1977), these findings and their consequences have been overlooked in many studies of organizational subunits. Consistent with their findings, the results obtained here emphasize that the structure and process choices for a particular organizational level are constrained and limited by design criteria imposed from macro-organizational levels. These findings not only support a managerial selection or congruence view of fit but also have important implications for understanding the other patterns of fit found in analyzing this contingency theory.

Second, no empirical evidence was obtained to substantiate the interaction approach to fit in the OA task-contingency model. These results were somewhat anticipated because of previous related analyses (Van de Ven and Drazin, 1978; Ferry, 1979; Van de Ven and Ferry, 1980). One explanation for this finding is that the empirical support present for the selection or congruence approach to fit in this data base implies that little variance exists for unit structure within levels of task uncertainty. The probability of detecting significant interactions of task uncertainty and structure on unit performance using ANOVA is therefore substantially reduced.

Furthermore, the deviation-score approach to fit, designed to overcome some of the limitations of the interaction approach, also failed to yield significant results. One explanation for this finding may lie in the difficulties associated with choosing the base-line context-structure relationship (Dewar and Werbel, 1979) from which residuals are calculated. If the regression equation chosen does not adequately represent high-performing units, then deviations from that equation will not be meaningful. However, using a high-performance holdout sample to establish the base-line model did not improve the results.

As discussed, the OA task-contingency model is essentially a theory of organizational modes. A systems approach to fit may be a more appropriate form of analysis for this type of theory. Here, fit is explained by a departure from a multivariate pattern of unit context and structure and process — not by the departures of isolated pairs of unit context and structure and process variables. For example, a given variable, such as standardization, may have a perfect match with a unit's level of task uncertainty, yet overall performance for that unit may be low because other variables not included in the analysis may be inconsistently matched with task uncertainty. Pairwise analysis may not be capable of detecting overall patterns of internal consistency among unit context and structure and process.

Support for the systems approach to fit was found in these data. Inconsistencies in a unit's structure and process, arising from departures from ideal-type systematized, discretionary, and developmental modes, were significantly related to performance. By viewing the OA task-contingency model as a theory of organizational modes and adopting a systems approach to fit, it was shown that fit is a significant predictor of unit performance.

Overall, these empirical findings suggest that explaining the performance of organizational units requires a more sophisticated approach to contingency theory than earlier efforts have used. A contingency model for the subunits in this sample appears to require that fit is the joint product of managerial selection and departures from an ideal multivariate pattern. No evidence was found to support the mainstream view of contingency theorists that fit is the simple interaction between isolated pairs of unit-context and structure and process dimensions on performance. Using multiple approaches to the evaluation of fit in this data base revealed that both congruent and contingency forms of fit were operating. This result is important because it replicates (although using different procedures) the universal and contingency findings of Dewar and Werbel (1979) and Fry and Slocum (1984). An exploration of the interrelationships between selection (congruent) and contingency approaches to fit is an important direction for contingency-theory researchers to follow.

We believe that the evaluation of multiple approaches to fit in the OA task-contingency theory provides an example of knowledge accumulation that contingency-theory researchers should follow. By documenting such results and accumulating knowledge across and between organizational levels and populations, researchers can make significant advances in mid-range theory. If future subunit studies replicate the findings on the alternative approaches to fit reported here, macro-micro relationships may be more readily understood. If a series of studies at an industry level of analysis or for professional rather than bureaucratic subunits shows a different pattern of findings, then some systematic relationships between types (or levels) of organizations may become evident. Knowing that forms of fit differ across conditions will be useful and may help to clear up inconsistent contingency-theory findings. Reporting tests of only one form of fit leaves more questions unanswered than resolved.

These research findings have a number of broader implications for general contingency-theory research. First, contingency studies should be designed to permit comparative evaluation of several forms of fit. The resulting complementary information can lead to more comprehensive descriptions of context-structure-performance relationships than a single approach to fit alone. By examining multiple approaches to fit in contingency studies and relating these findings to unique sample characteristics, one can develop mid-range theories of fit. In particular, researchers should attempt to explore and resolve the relationships and interdependencies among congruency (selection) and contingency (interaction and systems) forms of fit.

Second, contingency-theory researchers should be encouraged to further develop systems approaches to fit. Pattern analysis, as presented in this paper, is only one of several alternatives available to examine the gestalt characteristics of organizations. For example, it is common in both the strategy and organization literatures to examine the pattern of intercorrelations among variables (environment, strategy, structure) by dividing the sample into low- and high-performing groups. The high-performing group is expected to reveal relationships closer to a hypothesized model than the low-performing group (Van de Ven and Ferry, 1980).[4]

Furthermore, researchers could examine the effects of multiple contextual elements on fit. In this paper, the multivariate nature of the data was limited to only structure and process variables, while context was treated as a single variable. However, as Child (1977) has pointed out, multiple contextual factors can have conflicting implications on design. Indeed, in the analysis of these data, size correlated with several structural variables in a direction opposite to that of task uncertainty. Under these circumstances researchers might investigate how large organizations in uncertain environments or small organizations in certain environments address this apparent design

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We would like to thank Richard Daft for pointing out this approach to us.

dilemma. Adopting a systems approach seems uniquely promising in addressing these types of research questions.

Finally, these concepts of fit may be applied not only to structural contingency theory but to contingency theories in general. Fit is a concept of broad utility that is increasingly important in a wide range of organizational theories. Researchers interested in job design, leadership, or strategy-structure relationships have all at one time postulated that organizational performance is a function of the fit or match between two or more factors. Each of these management disciplines could potentially benefit from a more explicit examination of fit in their area.

REFERENCES

Aldrich, Howard
1979 Organizations and Environments. Englewood Cliffs, NJ: Prentice-Hall.

Alexander, Christopher
1964 Notes on the Synthesis of Form. Boston: Harvard University Press.

Ashby, W. Ross
1956 Introduction to Cybernetics. London: Chapman & Hall.

Child, John
1974 "Managerial and organization factors associated with company performance — Part I." Journal of Management Studies, 11: 175–189.
1975 "Managerial and organization factors associated with company performance — Part II: A contingency analysis." Journal of Management Studies, 12: 12–27.
1977 Organization: A Guide to Problems and Practice. New York: Harper & Row.

Comstock, Donald E., and L. S. Schroger
1979 "Hospital services and community characteristics: The physician as mediator." Journal of Health and Social Behavior, 20: 89–97.

Comstock, Donald E., and W. Richard Scott
1977 "Technology and the structure of subunits: Distinguishing individual and workgroup effects." Administrative Science Quarterly, 22: 177–202.

Dewar, Robert, and Jerald Hage
1978 "Size, technology, complexity and structural differentiation: Toward a conceptual synthesis." Administrative Science Quarterly, 23: 111–136.

Dewar, Robert, and James Werbel
1979 "Universalistic and contingency predictions of employee satisfaction and conflict." Administrative Science Quarterly, 24: 426–448.

DiMaggio, Paul J., and Walter W. Powell
1983 "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields." American Sociological Review, 48 (April): 147–160.

Dubin, Robert
1976 "Theory building in applied areas." In Marvin Dunnette (ed.), Handbook of Industrial and Organizational Psychology: 17–39. Chicago: Rand McNally.

Fennell, Mary L.
1980 "The effects of environmental characteristics on the structure of hospital clusters." Administrative Science Quarterly, 25: 485–510.

Ferry, Diane L.
1979 "A test of a task contingent model of unit structure and efficiency." Unpublished doctoral dissertation, The Wharton School, University of Pennsylvania.
1983 "The Organization Assessment Instrument: An evaluation of intrinsic validity." Paper presented at 43rd Annual Meeting of Academy of Management, Dallas, August.

Ford, Jeffrey D., and John W. Slocum, Jr.
1977 "Size, technology, environment and the structure of organizations." Academy of Management Review, 4: 561–575.

Freeman, John H.
1973 "Environment, technology and the administrative intensity of organizations." American Sociological Review, 38: 750–763.

Fry, Louis W.
1982 "Technology-structure research: Three critical issues." Academy of Management Journal, 25 (3): 532–552.

Fry, Louis W., and Debra Schellenberg
1984 "Congruence, contingency and theory building: An integrative perspective." Unpublished manuscript, University of Washington, Seattle.

Fry, Louis W., and John W. Slocum, Jr.
1984 "Technology, structure and work group effectiveness: A test of a contingency model." Academy of Management Journal, 27: 221–246.

Fullan, M.
1970 "Industrial technology and worker integration in the organization." American Sociological Review, 35: 1028–1039.

Galbraith, Jay R.
1977 Organization Design. Reading, MA: Addison-Wesley.
1982 "Designing the innovating organization." Organizational Dynamics, 10 (3): 5–25.

Gerwin, Donald
1976 "A systems framework for organization structural design." In Ralph H. Kilmann, Louis R. Pondy, and Donald P. Slevin (eds.), The Management of Organization Design, 1: 89–102.

Green, Paul E.
1978 Analyzing Multivariate Data. Hinsdale, IL: Dryden.

Hage, Jerald, and Michael Aiken
1969 "Routine technology, social structure and organization goals." Administrative Science Quarterly, 14 (September): 366–376.

Hall, Richard H.
1962 "Intraorganizational structural variation: Application of the bureaucratic model." Administrative Science Quarterly, 7 (December): 295–308.

Hannan, Michael T., and John H. Freeman
1977 "The population ecology of organizations." American Journal of Sociology, 82: 929–964.

Hays, William L.
1973 Statistics. New York: Holt, Rinehart and Winston.
1976 Statistics. New York: Holt, Rinehart and Winston.

Khandwalla, Pradip N.
1973 "Viable and effective organizational designs of firms." Academy of Management Journal, 16: 481–495.
1974 "Mass output orientation of operations technology and organizational structure." Administrative Science Quarterly, 19: 74–97.

Marsh, Robert M., and Hiroshi Mannari
1981 "Technology and size as determinants of the organizational structure of Japanese factories." Administrative Science Quarterly, 26: 33–57.

McKelvey, Bill
1982 Organizational Systematics: Taxonomy, Evolution, Classification, Berkeley, CA: University of California Press.

Miller, Danny
1981 "Toward a new contingency approach: The search for organizational gestalts." Journal of Management Studies, 18: 1–26.

Miller, John P.
1981 "Information processing in organizations: An examination of the contingent effects of information ambiguity, organization structure, communication, and decision making on organizational conflict and effectiveness." Unpublished Ph.D. dissertation, Northwestern University.

Mohr, Lawrence B.
1971 "Organizational technology and organizational structure." Administrative Science Quarterly, 16: 444–459.
1982 Explaining Organization Behavior. San Francisco: Jossey-Bass.

Nadler, David A., and Michael L. Tushman
1980 "A model for diagnosing organizational behavior: Applying a congruence perspective." Organizational Dynamics, 9 (2): 35–51.

Negandhi, Anant R., and Bernard C. Reimann
1972 "A contingency theory of organization reexamined in the context of a developing country." Academy of Management Journal, 19: 137–146.

Nightingale, Donald V., and Jean-Marie Toulouse
1977 "Toward a multi-level congruence theory of organization." Administrative Science Quarterly, 22: 264–280.

Ouchi, William G.
1981 Theory Z. Reading, MA: Addison-Wesley.

Pascale, Richard T., and Anthony G. Athos
1981 The Art of Japanese Management. New York: Warner Books.

Pennings, Johannes M.
1975 "The relevance of the structural-contingency model of organizational effectiveness." Administrative Science Quarterly, 20: 393–410.

Perrow, Charles
1967 "A framework for the comparative analysis of organizations." American Sociological Review, 32: 194–208.

Peters, Thomas J., and Robert H. Waterman
1982 In Search of Excellence. New York: Harper & Row.

Pfeffer, Jeffrey
1982 Organizations and Organization Theory. Marshfield, MA: Pitman.

Pierce, Jon L., Randall B. Dunham, and Richard S. Blackburn
1979 "Social systems structure, job design and growth needs strength: A test of a congruency model." Academy of Management Journal, 22: 223–240.

Schoonhoven, Claudia B.
1981 "Problems with contingency theory: Testing assumptions hidden within the language of contingency theory." Administrative Science Quarterly, 26: 349–377.

Stinchcombe, Arthur L.
1968 Constructing Social Theories. New York: Harcourt, Brace and World.

Tosi, Henry, and John W. Slocum, Jr.
1984 "Contingency theory: Some suggested directions." Journal of Management, 10 (1): 9–26.

Tushman, Michael L.
1977 "Special boundary roles in the innovation process." Administrative Science Quarterly, 22: 587–605.
1978 "Technical communication in R&D Laboratories: The impact of project work characteristics." Academy of Management Journal, 21: 624–645.
1979 "Work characteristics and subunit communication structure: A contingency analysis." Administrative Science Quarterly, 24: 82–98.

Van de Ven, Andrew H.
1976a "A framework for organization assessment." Academy of Management Review, 1 (1): 64–78.
1976b "Equally efficient structural variations within organizations." In R. H. Kilmann, L. R. Pondy, and D. P. Slevin (eds.), The Management of Organization Design: Research and Methodology, 2: 150–170. New York: Elsevier, North-Holland.
1979 Review of Howard Aldrich, Organizations and Environments. Administrative Science Quarterly, 24: 320–326.

Van de Ven, Andrew H., and André L. Delbecq
1974 "A task contingent model of work-unit structure." Administrative Science Quarterly, 192: 183–197.

Van de Ven, Andrew H., André L. Delbecq, and Richard Koenig, Jr.
1976 "Determinants of coordination modes within organizations." American Sociological Review, 332–338.

Van de Ven, Andrew H., and Robert Drazin
1978 "Test of a task contingent theory of work unit design and performance." Paper presented at the Annual Meeting of the Academy of Management, San Francisco, August.
1985 "The concept of fit in contingency theory." In Barry M. Staw and L. L. Cummings (eds.), Research in Organizational Behavior, 7: 333–365. Greenwich, CT: JAI Press.

Van de Ven, Andrew H., and Diane L. Ferry
1980 Measuring and Assessing Organizations. New York: Wiley.

Woodward, Joan
1965 Industrial Organization: Theory and Practice. London: Oxford University Press.