Academy of Management Review 1980, Vol. 5, No. 1, 49-64

Organization Structure and Performance: A Critical Review[1]

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We examine the literature addressing the empirical relationships, if any, between organization structure and performance, and draw distinctions between "hard" and "soft" performance criteria, subgroup versus organization units of analysis, and "structuring" versus "structural" dimensions of structure. Our concluding recommendations for future research are offered not as the inevitable prescription but rather in the interest of correcting marked deficiencies and imbalances.

Organization structure may be considered the anatomy of the organization, providing a foundation within which the organization functions. Organization structure is believed to affect the behavior of organization members. As Hall [1977] noted, this belief is based on a simple observation. Buildings have halls, stairways, entries, exits, walls, and roofs. The specific structure of a building is a major determinant of the activities of the people within it. Similarly, behavior in organizations is influenced by the organizing structure. The influence of this structure, while not as apparent as that of a building, is assumed to be pervasive.

All organizations have structure. Hall suggested that structure has two basic functions, each of which is likely to affect individual behavior and organizational performance: "First, structures are designed to minimize or at least regulate the influence of individual variations on the organization," and "structure is the setting in which power is exercised . . . , decisions are made . . . , and . . . the organization's activities are carried out" [p. 109]. Van de Ven [1976] highlighted the importance of structure both at the organization and subunit levels for the performance (efficiency, morale, and effectiveness) of organizations.

Organization structure has been subject to recent journal review [Cummings & Berger, 1976; Ford & Slocum, 1977; James & Jones, 1976; Ouchi & Harris, 1974; Scott, 1975] and has been the topic of several recent books [Burack & Neghandhi, 1977; Galbraith, 1977; Khandwalla, 1977; Kilman, Pondy, & Slevin, 1976; MacKenzie, 1978; Melcher, 1976; Pfeffer, 1978]. However, the association between structural variables and performance — perhaps the single most important dependent variable in both the public and private sector — has been largely ignored. James and Jones, for instance, reviewed the *conceptual* relationships between organization structure and individual attitudes and behavior. Scott examined the effect of technology

[1]We gratefully acknowledge the support received for the preparation of this paper from the Urban Mass Transportation Administration (Contract No. CA-11-0016) and the Institute of Transportation Studies, University of California, Irvine.

on selected structural variables. Ford and Slocum and Ouchi and Harris reviewed the structural literature with respect to technology and environment. Cummings and Berger conservatively estimated that within the last decade nearly 50 research studies examined the relations of organization structure to member's attitudes and behavior. Their review found performance to be considered as a dependent variable in only two cases: Farris [1969] and Ingham [1970]. Porter and Lawler's earlier [1965] exhaustive review was focused primarily on attitude because, again, studies of association with performance were relatively few. Although relevant citations are currently in the literature, associations between structural variables and performance have not been subject to review. We shall examine the literature that addresses the empirical relationships, if any, between structure and performance.

Organizational performance or effectiveness as a variable dependent on structure has been envisioned and measured in various ways. In this review, we rely heavily on "hard" performance criteria: sales, gross profit, production, commissions, and services rendered (non-profit sector). Supervisor appraisals, self-perceptions, and similar measures will be considered "soft" and less indicative of "bottom line" organizational performance. Empirical research that does not explicitly identify either individual or organizational performance as a dependent variable will not be considered.

Both organization and subunit levels of performance as variables dependent on structural dimen-

Table 1
Various Models of Organizational Structure

	Structural				Structuring		
Present Review	size	span of control	flat/tall hierarchy	administrative intensity	specialization	formalization standardization	centralization
Hall, 1962					complexity	formalization standardization	
Porter & Lawler, 1965	size	span of control	flat/tall				centralization
Hall et al., 1967	size				complexity	formalization	
Pugh et al., 1968			configuration		specialization	formalization standardization	centralization
Indik, 1968	size	span of control	# of hierarchies		task specialization	task specification	authority structure
Sells, 1968	size				differentiation	role structure	control autonomy
Hickson et al., 1969		line control of work			structuring of activities		concentration of authority
Inkson et al., 1970a, 1970b					structuring of activities		concentration of authority
Prien & Ronan, 1971	size				extent of technology	formalization standardization	centralization of authority
Child, 1972			vertical span		specialization	documentation standardization	
Payne & Mansfield, 1976		subordinate ratio	vertical span		role specialization	formalization standardization	centralization
Hrebiniak, 1974		closeness of supervision				extent of rule usage	control autonomy participation
James & Jones, 1976	size		configuration		specialization	formalization standardization	centralization

sions will be considered in this review. As necessary, studies using organization versus subunit levels of analysis will be distinguished.

The term "structure" embodies a variety of concepts. Structure has been atomized into component parts, referred to as structural dimensions. Their exact nature, and the question of whether they are proper atomizations, have been subject to discussion and disagreement. Table 1 is a compendium of the manner in which some theorists have visualized structure. For this review, there need be no selection among models. Dimensions that appear most consistently in the literature are used irrespective of the particular models from which they may have been abstracted.

Campbell, Bownas, Peterson, and Dunnette [1974] suggested a useful distinction between "structural" and "structuring" characteristics of organizations. The "structural" qualities of an organization are its physical characteristics, such as size, span of control, and flat/tall hierarchy. In contrast, "structuring" refers to policies and activities occurring within the organization that prescribe or restrict the behavior of organization members. The dimensions under review here have been arranged according to this distinction:

Structural	**Structuring**
Size/subunit size	Specialization
Span of control	Formalization
Flat/tall hierarchy	Centralization
Administrative intensity	

Structural Dimensions

Table 2 summarizes the literature dealing with the relationships between structural dimensions and performance. We shall review the literature and discuss each dimension separately.

Organization/Subunit Size And Performance

Early investigations concentrated on the relationship between subunit size and performance. Several studies [Indik & Seashore, 1961; Katzell, Barrett, & Parker, 1961; Marriott, 1949; Thomas, 1959] reported an inverse relationship between subunit size and performance. Argyle, Gardner, and Cioffi [1958] found otherwise: they reported a slight tendency for larger work groups to outperform smaller groups. A more recent study [Hrebiniak & Allutto, 1973], utilizing cost per patient day as a measure of performance, found a negative association in a study of hospital departments. Apparently, as the size of inpatient psychiatric departments increases, the cost per patient day increases as well.

At the organization level, Herbst [1957] and Revans [1958] in three studies, comparing size with retail sales in two cases and output per coal miner in a third, found curvilinear relationships. Medium-sized organizations outperformed both larger and smaller firms. In the last decade, organization size and organization level performance has been investigated five times, but no association between size and performance has been reported. Studies [Bidwell & Kasarda, 1975; Corwin, 1970] using reading and mathematics achievement scores, drop-out, and college attendance rates as performance measures, reported no association between school size and student performance. Additional studies conducted in high schools, industrial firms, and community colleges have also reported zero association between size and performance. These studies, however, used relatively soft performance criteria: self-assessments of performance by executives comparing their operations with others [Reimann, 1975]; ratings of teaching performance by college presidents and deans [Fiedler & Gillo, 1974]; and "degree of effective operations," which was undefined [Mahoney, Frost, Crandall, & Weitzel, 1972]. Three of the five studies, then, did not use hard performance criteria.

Measurement also can be problematic. Kimberly [1976] noted that many studies utilizing size as a variable are beset with both conceptual and empirical problems. A lack of consistency in the reviewed studies may lead to an inadequate understanding of the role of organization size. Hrebiniak and Alutto, for instance, used number of beds as an indication of organization size, a common practice in differentiating hospitals. Bidwell and Kasarda used average daily student attendance, an accepted criterion of school size. Reimann counted the number of full-time employees. Each method is reasonable; comparison of these studies is complicated, however, because the measures are neither identical nor interchangeable. Moreover, Reimann, and Bidwell and Kasarda used a logarithmic conversion to normalize size. The others did not do so. Again, this makes responsible comparison difficult.

Table 2
Relationships Between Dimensions and Performance

STRUCTURAL DIMENSION	INVESTIGATORS	SAMPLE	RELATIONSHIP
Organization and Subunit Size and Performance	Marriott, 1949	work groups	inverse
	Herbst, 1957	retail stores	curvilinear
	Revans, 1958	mines	curvilinear
	Revans, 1958	retail stores	curvilinear
	Argyle, Gardner, & Cioffi, 1958	work groups	positive
	Thomas, 1959	welfare workers	inverse
	Katzell, Barrett, & Parker, 1961	company divisions	inverse
	Indik & Seashore, 1961	departments	inverse
	Indik & Seashore, 1961	automobile dealerships	zero
	Blau, Heydebrand, & Stauffer, 1966	health care organizations	positive
	Hrebiniak & Allutto, 1973	hospital departments	inverse
	Corwin, 1970	high schools	zero
	Mahoney, Frost, Crandell, & Weitzel, 1972	industrial firms	zero
	Fiedler & Gillo, 1974	community colleges	zero
	Reimann, 1975	school districts	zero
	Bidwell & Kasarda, 1975	schools	zero
Organization Size and Incidence and Duration of Strikes	Cleland, 1955	factories	positive
	Revans, 1958	mines	positive
	Shorter & Tilley, 1971	industry	positive
	Britt & Galle, 1974	industry	inverse (incidence)
			zero (duration)
	Eisele, 1974	manufacturing plants	curvilinear (contengent on technology used)
Organization and Subunit Size and Absenteeism	Kerr, Koppelmeier, & Sullivan, 1951	departments	positive
	Metzner & Mann, 1953	white collar workers	zero
		blue collar workers	positive
	Acton Society Trust, 1953	factories	positive
	Hewitt & Parfitt, 1953	departments	positive
	Argyle, Gardner, & Cioffi, 1958	work groups	curvilinear
	Revans, 1958	gas works	positive
	Revans, 1958	factories	positive
	Revans, 1958	factories	positive
	Baumgartel & Sobol, 1959	airline departments	positive
	Indik & Seashore, 1961	departments	positive
	Ingham, 1970	industrial organizations	positive

Table 2 (Continued)

STRUCTURAL DIMENSION	INVESTIGATORS	SAMPLE	RELATIONSHIP
Organization and Subunit Size and Turnover	Kerr, Koppelmeir, & Sullivan, 1951	departments	positive
	Mandell, 1956	departments	positive
	Argyle, Gardner, & Cioffi, 1958	work groups	zero
	Indik & Seashore, 1961	automobile dealerships	positive
	Ingham, 1970	industrial organizations	zero
	Reimann, 1975	manufacturing organizations	zero
Span of Control and Performance	Worthy, 1950	department store	positive
	Woodward, 1958	industrial organizations	curvilinear
	Ronan & Prien, 1973	manufacturing departments	zero
	Farris, 1969	engineers	positive
Flat/Tall Hierarchy and Performance	Meltzer & Salter, 1962	engineers	positive
	Blau, 1968	government agencies	positive
	Carzo & Yanousas, 1969	lab study	positive
	Ivancevich & Donnelly, 1975	salespersons	inverse
Administrative Intensity and Performance	Melman, 1951	manufacturing	inverse
	Melman, 1956	manufacturing	inverse
	Holland, 1963	manufacturing	positive
	Hildebrand & Liu, 1965	manufacturing	positive
	Delehanty, 1968	manufacturing	positive
	Pondy, 1969	manufacturing	positive
	Bidwell & Kasarda, 1975	school districts	inverse

In summary, at the subunit level of analysis, there is evidence of an inverse association between size and performance. At the organization level, *all* available evidence suggests that there is no clear, systematic relationship between organization size and performance.

Organization Size And Incidence/Duration of Strikes

Presumably, the incidence of a general work stoppage of an organization's work force would affect the organization's performance. For the 10-year period 1966-1975, approximately 41 million person-days per year were lost to strikes [Department of Labor, 1976]. Organizations faced with frequent or prolonged work stoppage may well suffer reduced bottom-line performance, in terms of both operating profits (short run) and market position (longer run) [Walton & McKersie, 1965].

Early investigations supported a positive association between the size of an organization and the incidence of strikes. Cleland [1955] found large companies were more likely to have experienced one or more strikes in their history. Conversely, small companies were more likely to have had no strikes. Revans [1958], in a study of British coal mining, reported a positive correlation between size and production lost due to strikes. "Production lost due to strikes" appears to be a function not only of the number of strikes but also their duration. Presumably, one extended strike would affect production as much as several shorter work stoppages.

Based on these studies, it could be concluded that smaller organizations are less likely to have serious labor problems than larger ones. Porter and Lawler [1965], however, advised caution with this interpretation. They suggested that it may not be the size of the operation but the type of technology utilized that is associated with strikes. Empirical support for this position was provided by Eisele [1974]. In a study of manufacturing organizations classified according to Woodward's "technical complexity" [1958], a curvilinear relationship was found between size and strike frequency. Plants with technology Type II (large batch and mass) experienced higher strike frequencies than plants with Type I (unit and small batch) and Type III (process) technologies.

Shorter and Tilley [1971], in an ambitious study of French industry over the period 1880-1960, reported a positive relationship between size of organization and incidence of strikes. Britt and Galle [1974], however, did not validate this finding for the United States. They reported a negative relationship for incidence and zero association with the duration of strikes. For the period 1968-1970, larger concentrations of workers inhibited the frequency of strikes, rather than facilitating them. This finding is compatible with the view of Olson [1971], who suggested that the availability of large pools of labor reduces the efficacy of strike activity.

The attempt to identify a trend is hazardous for several reasons. One, it is not clear that the nature of labor relations in general, or specific relationships between size and incidence of strike, can be generalized across nations. Therefore, both Revans (British industry) and Shorter and Tilley (French industry) may have limited applicability. Second, the impact of unionization has been largely ignored. Cleland included non-union plants in his study, as did Eisele; Britt and Galle controlled for unionization. It remains an empirical question whether unionized plants have different strike patterns by both incidence and duration with respect to organization size. Perhaps large unions and large organizations employ professional negotiators. What about availability of strike funds? Does the size of labor unions affect the number or length of strikes? There is an additional problem with these analyses. Arguably, the more workers employed in an industry, the more subunits, departments, or geographic locations there are likely to be. Even if the "propensity to strike" (brought about by whatever means, attitudes, or conditions) were perfectly random across industries, one would expect a greater incidence of strikes in large industries by chance alone. It is therefore fair to state that the relationship, if any, between organization size and incidence of strikes has not been determined.

Organization and Subunit Size And Absenteeism/Turnover

Porter and Steers [1973] indicate that both turnover and absenteeism represent behaviors that have potentially critical consequences for the organization. While it is questionable that turnover *necessarily* reduces organizational effectiveness [Dalton & Todor, 1979; Price, 1976], it is probably fair to state that *excessive* levels will affect organizational performance.

In recent years, there has been a relative paucity of research in these areas; only one study has addressed absenteeism and *organization* size in the last 17 years. Ingham (1970) found a positive correlation, which is consistent with earlier studies. Of the 11 remaining studies, all of which investigated the association between absenteeism and *subunit* size, 9 reported positive corelations [Acton Society Trust, 1953; Baumgartel & Sobol, 1959; Hewitt & Parfitt, 1953; Indik & Seashore, 1961; Kerr, Koppelmeier, & Sullivan, 1951; Metzner & Mann, 1953; Revans, 1958]. The preponderance of evidence indicates a definite positive relationship between subunit size and absenteeism.

With respect to turnover, two recent investigations at the organization level found no association between size and turnover [Ingham, 1970; Reimann, 1975]. In subunit analyses, one zero [Argyle, Gardner, & Cioffi, 1958] and three positive associations [Indik & Seashore, 1961; Kerr, Koppelmeier, & Sullivan, 1951; Mandell, 1956] have been reported.

Span of Control and Performance

Span of control, a so-called principle of management, refers to the number of subordinates who report directly to a supervisor. Presumably, the effectiveness of work groups may vary as a function of whether few persons (narrow span) or many (wide span) report to a supervisor.

Nearly 15 years ago, Porter and Lawler [1965] indicated that there had been little, if any, empirical study of the classical prescriptions of span of control. The same could be said today. Worthy [1950], in comments contrary to classical notions, indicated that large spans were superior because they provide opportunity for personal initiative and better communication. Unfortunately, empirical support was not provided.

Woodward [1958, 1965], failing to find a consistent relationship between span of control and organization success, categorized companies by technical complexity (unit, batch, process). She concluded that there seemed to be an optimal level of span of control for successful firms in each of the three technical categories. Less successful firms were characterized by spans of control that were either too large or too small. An important finding was that the optimal span of control differed depending of the technological category.

More recently, Ronan and Prien [1973] found no relationship between span of control and a variety of effectiveness measures. Of 18 performance variables reported, only 1 — total controllable labor and expenses — could be considered a hard criterion.

Farris [1969] reported positive correlations between performance measures and span of control. Two of the performance measures (number of patents, technical reports) were hard; two others (ratings of supervisors) were soft.

Conflicting reports and a paucity of empirical work in the area make it difficult to summarize this research. Worthy's conclusions were not supported empirically; Woodward introduced technical complexity as a mediating variable; Ronan and Prien found no association between span of control and organization performance; Farris reported a positive correlation. In addition, Woodward investigated first-level supervisors, Farris (1969) engineers. It is probably safe to say that there is *no* evidence concerning the relationship of span of control and performance of blue collar, nonmanagerial, or nonprofessional employees.

Flat/Tall Hierarchy and Performance

Span of control and the "flat/tall" dimensions are closely related. Flat/tall refers to the number of hierarchical levels of organization. With a given number of employees, relatively tall structure (many hierarchical levels) must necessarily have a narrower average span of control. Correspondingly, a relatively flat structure (few hierarchical levels) would necessarily have a wider average span of control. For this reason, studies reviewed in each are interchangeable. Worthy, for instance, stated "*flatter* . . . structures tend to create a potential for more effective supervision" [p. 179]. Again, no data have been reported to support this contention.

Several studies have directly addressed the flat/tall dimension. Meltzer and Salter [1962] examined the productivity of physiologists. A positive association was found between number of publications and vertical span. Blau [1968] reported that tall organizations tend to have more explicit promotion regulations emphasizing merit rather than seniority. This is a very soft measure. Whether merit promotion affects organization effectiveness remains an empirical question. Carzo and Yanouzas [1969] investigated this relationship in a laboratory format. The amount of time taken to complete decisions did not differ significantly between tall and flat structures; however, flat organizations required more time to resolve conflict and coordinate effort, and tall organizations performed better with respect to profit and rate of return on revenue. An important aspect of this study is that "profit" and "rate of return on revenue" were not organizationally derived, but were laboratory constructs. In a field study, Ivancevich and Donnelly [1975] found salespersons were more effective in flat organizations. Three measures of effectiveness were utilized in this study: absenteeism, total number of orders received by a salesperson divided by total number of retail outlets visited, and miles traveled by salespersons divided by the number of retail outlets visited.

Summarization of the vertical span relationship is problematic. It is difficult to generalize across findings with professionals [Meltzer & Salter], laboratory studies [Carzo & Yanouzas], and white collar employees [Blau; Ivancevich & Donnelly], with both positive and negative associations reported.

Administrative Intensity and Performance

For our purposes, administrative intensity is defined as the number of administrative personnel

Table 3
Relationships Between Dimensions and Performance

STRUCTURING DIMENSION	INVESTIGATORS	SAMPLE	RELATIONSHIP
Specialization/Complexity and Performance	Blau et al, 1966	health care organizations	positive (small units)
			zero (large units)
	Corwin 1970	high schools	zero
	Hage & Dewar, 1973	health & welfare organizations	positive
	Reimann, 1975	manufacturing firms	zero
	Baldridge & Burnham, 1975	school districts	positive
	Beck & Betz, 1975	elementary & secondary schools	positive
Formalization and Performance	Hage & Dewar, 1973	health & welfare organizations	zero
	Child, 1974	British organizations	inverse (in variable environment)
			positive (in *less* variable environment)
	Harrison,1974	scientists	positive
	Schuler, 1975	manufacturing employees	zero
	Baum & Youngblood, 1975	students (lab)	positive
	Rogers & Mulnar, 1976	county administrators	zero
	Vrendenburgh & Alutto, 1977	bank employees	zero
	Vinson & Holloway, 1977	clerical, professional, & managerial employees	positive

(managers, professionals, and clerical workers) divided by the number of production workers (craftsman, operatives, and laborers). Pondy [1969], with data accumulated from 45 manufacturing industries, found a range of administrative intensity from 8.7 percent in the logging industry to 131.1 percent in the drug industry. Are levels of administrative intensity associated with performance? Melman [1951, 1956] identified a large increase in administrative overhead for United States manufacturing industries. He argued that the growth in administrative intensity was not related to increases in labor productivity. Rather, they are separate processes; increases in administrative ratio are not positively associated with performance. In support of this view, Bidwell and Kasarda [1975] found a negative relationship between administrative intensity and performance in school districts.

Others [Delehanty, 1968; Holland, 1963] are not convinced. They posit that both labor productivity and administrative intensity can be considered as main factors resulting in increases in industrial productivity. Hildebrand and Liu [1957], for example, reported a positive relationship between costs of administrative overhead and levels of production.

Pondy's investigation is the only empirical work that directly compares administrative intensity with performance. For a sample of 45 manufacturing industries, administrative intensity was found to

Table 3 (Continued)

STRUCTURING DIMENSION	INVESTIGATORS	SAMPLE	RELATIONSHIP
Centralization and Performance	Weiss, 1957	companies	zero
	Tannenbaum, 1961	voluntary organizations	inverse
	Bowers, 1964	insurance companies	zero
	Miller, 1967	engineers	inverse
	McMahon & Peritt, 1971	managers	zero
	Khandwalla, 1973	companies	zero
	Hage & Dewar 1973	health & welfare organizations	zero
	Luke et al, 1973	retail food organizations	inverse
	Fiedler & Gillo, 1974	community colleges	zero
	Harrison, 1974	scientists	inverse
	Sorensen & Baum, 1975	voluntary organizations	inverse
	Beck & Betz, 1975	elementary & secondary schools	inverse
	Reimann, 1975	manufacturing firms	zero
	Pennings, 1976	brokerage firms	inverse
	Reimann & Negandhi, 1976	manufacturing firms	zero
	McMahon & Ivancevich, 1976	managers	zero
	McMahon, 1976	managers	inverse

vary inversely with value added per production worker. Dogramici [1977], however, questioned certain assumptions implicit in Pondy's model. Pondy [1977] concurred, in part, with several of Dogramici's criticisms.

Once again, a definitive summarization is not possible. There are those who report positive [Delehanty; Holland; Pondy], and negative [Bidwell & Kasarda; Melman] associations. The relationship between administrative intensity and performance remains undetermined.

Structuring Dimensions

As previously noted, "structuring" dimensions refer to policies and activities occurring within organizations that prescribe or restrict behavior of organizational members. In contrast, "structural" dimensions such as size, span of control, and administrative intensity do not describe or limit the behavior of role incumbents in organizations. They are, rather, dimensions that define the physical milieu in which behavior occurs. Conversely, specialization, formalization/standardization, and centralization do prescribe behavior. Table 3 presents a compendium of the relationships between structuring dimensions and performance.

Specialization/Complexity And Performance

Specialization is defined as the number of different occupational titles or different functional activities pursued within an organization [Payne & Mansfield, 1976; Pugh, Hickson, Hinings, & Turner, 1968]. Hage and Dewar [1973] defined complexity as the number of different occupational specialties. Specialization and complexity are similar concepts and are treated jointly in this section.

There is little empirical work in this area that has used performance as a dependent variable. Corwin [1970] and Reimann [1975] in studies of high

schools and manufacturing firms reported no significant relationship. Several other investigations reported positive associations [Baldridge & Burnham, 1975; Beck & Betz, 1975; Hage & Dewar, 1973]. Unfortunately, none of the studies reporting positive associations meet the hard performance criterion. Beck and Betz reported that interstratum conflict is decreased by specialization in elementary and secondary schools. Interstratum conflict occurs among organizational units of dissimilar authority over allocation of control within the organization [Beck & Betz; Pondy, 1967]. The relationship between interstratum conflict and performance, however, has not been empirically determined. Hage and Dewar, and Baldridge and Burnham found a positive association between specialization and innovation in both school districts and health-and-welfare organizations. Again, while the notion is intuitively appealing, there is no empirical link between innovation and performance.

Although the preponderance of evidence suggests a positive relationship between specialization/complexity and performance, the lack of hard performance criteria, coupled with reports of no association [Corwin; Reimann], leads to the conclusion that the association between specialization and performance has not been clearly demonstrated.

Formalization/Standardization And Performance

Formalization refers to the extent to which appropriate behavior is described in writing. Standardization is closely aligned to formalization. Standardization prescribes or limits behavior and procedures of members of the organization. Formalization in this sense might be a job description outlining those activities expected in a job classification (e.g., "the assistant personnel manager will be responsible for the testing of prospective employees"). Notice that, although this written statement describes a certain behavior expected of persons in the classification, it does not in any way limit or prescribe procedures by which assistant personnel managers should fulfill this responsibility. Standardization would specifically outline those procedures by which the "testing of prospective employees" should (must) be accomplished. Formalization, then, refers to *what* one is asked to do; standardization refers to *how* one is to do it.

Two distinct points of view are evident with respect to formalization/standardization and performance. Without a minimum level of formalization and standardization, role ambiguity may occur. Role ambiguity may affect member attitude and performance [Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Rizzo, House, & Lirtzman, 1970]. Conversely, formalization and standardization *may* limit job scope, resulting in boredom, alienation, job dissatisfaction, absenteeism, turnover, and low output [Hackman & Lawler, 1971; Hulin & Blood, 1968]. These alternative effects suggest a curvilinear relationship wherein there may be an optimal level of formalization/standardization that reduces role ambiguity yet maintains reasonable levels of job scope.

Empirical research conducted at the subunit level of analysis neither supports nor rejects this hypothesis. Research on health-and-welfare agencies [Hage & Dewar, 1973], manufacturing employees [Schuler, 1975], county administrators [Rogers & Mulnar, 1976], and bank employees [Vredenburgh & Alutto, 1977] found no association between formalization and performance. Harrison [1974], Baum and Youngblood [1975], and Vinson and Holloway [1977] reported positive associations. Unfortunately, none of the research used hard performance criteria. Perceived role performance [Harrison], peer and supervisory ratings [Schuler; Vinson & Holloway], laboratory simulation [Baum & Youngblood], and role ambiguity [Rogers & Mulnar] were all used as measures of performance.

Aside from issues of performance measurement, reports refer to scientists, and to students in laboratory settings. The performance propensities of students and scientists relative to formalization have questionable generalizability to blue collar and nonprofessional personnel. We can conclude that an association between levels of formalization and performance has not been convincingly demonstrated.

Centralization and Performance

Centralization involves the locus of authority to make decisions in organizations. If, for instance, the power to make decisions is exercised by one or relatively few individuals, the structure is considered centralized. One person making every deci-

sion is the ultimate in centralization. The minimum degree of centralization (decentralization) would exist in an organization if decision-making authority were exercised equally by every member of the organization. Degree of centralization, then, refers to the disperson of decision-making authority throughout the organization.

At the subunit level of analysis, both negative [Harrison, 1974; McMahon, 1976; Miller, 1967] and zero associations [McMahon & Ivancevich, 1976; McMahon & Perritt, 1971] have been reported. At the organizational level of analysis, the findings are similar: negative [Beck & Betz, 1975; Luke, Block, Davey, & Averch, 1973; Pennings, 1976; Sorensen & Baum, 1975; Tannenbaum, 1961] and zero [Bowers, 1964, Fiedler & Gillo, 1974; Khandwalla, 1973; Hage & Dewar, 1973; Reimann, 1975; Reimann & Neghandi, 1976; Weiss, 1957] associations have been reported.

In both subunit and organization level analysis, the evidence supports a conclusion that centralization is negatively associated with performance. We, however, are disinclined to firmly state this conclusion. For one thing, the overwhelming majority of these studies did not use hard performance criteria. For instance, all three studies cited that indicated an inverse association between centralization and performance at the subunit level used soft measures as the dependent variable: alienation [Miller]; and a variety of performance perceptions [Harrison; McMahon]. Furthermore, the three studies that did use hard performance data examined centralization and performance on professionals [Pennings] and managers [Bowers; Luke et al.].

The lack of hard criteria reduces confidence in generalizing an overall reported inverse association and, again, it is not clear that managers and professionals react as blue collar or nonprofessional employees to centralization. Nonetheless, the limited evidence tends to support a negative relationship between centralization and performance for managers and professionals in studies using hard performance criteria. Otherwise, little is known of the association between centralization and performance.

Contingency Approach to Structural-Performance Relations

Some research suggests that combinations of situational and structural variables may be more associated with organizational performance than either of these variables acting alone. Although a few studies addressed in this review have considered situational variables [Blau, Heydebrand & Stauffer, 1966; Eisele, 1974; Child, 1974; Woodward, 1958, 1965], most studies dealing with pattern variables are conspicuously absent because they have not used performance as a dependent variable [Fullan, 1970; Hage & Aiken, 1964; Harvey, 1968; Hickson, Pugh, & Pheysey, 1969; Hrebiniak, 1974; Lawrence & Lorsch, 1967; Meyer, 1968].

There are studies, of course, that have performance variables as dependent variables in a contingency format. These studies, however, do not report consistent findings with respect to the contextual variables and performance.

Zwerman [1970], in a study of 55 manufacturing firms, found no association between the technological-structural fit and performance. In a study of work groups in local health departments, Mohr [1971] argued that no relation exists between the degree of congruence and technology-structure and organizational performance. Mahoney and Frost [1974], in a study of nearly 300 organizational units classified into long-linked, mediating, and intensive technologies [Thompson, 1967], found no direct relationship between technology and effectiveness. In two ambitious organization-level studies, neither Rumelt [1974] nor Franko [1974] was able to establish a clear linkage between environmental complexity, structure, and performance. Pennings [1976] reported, for a sample of United States brokrage houses, that the fit between structural and environmental variables appeared to have little effect on performance. Effectiveness was primarily due to organization structure. Little of the proportion of variance in effectiveness was due to environmental contingencies.

Conversely, Stopford and Wells [1972] reported environmental-structural relationships to performance for American multinational corporations. Child [1975], in a study of 80 British corporations, found that the association between formalization and performance was contingent on the size of the organization. Small organizations were more effective with little formalization; larger organizations were more effective with formalized structure.

Khandwalla [1973], in research based on 79 United States firms and using long-term profitability as the dependent variable, concluded that patterns of relationship between situational and structural variables can substantially affect organizational performance. A study of 153 farm cooperatives indicated relationships between structural dimensions, and various measures of organizational effectiveness differed according to the size of the cooperative [Evers, Bohlen, & Warren, 1976]. Recently, Coulter [1979], in a study of municipal fire departments, has identified effectiveness as being related to both the organization's environment and its structure.

The problems in summarizing the contingency approach to structural-performance relationships are threefold: (1) many of the studies conducted in this are have not addressed performance as a variable; (2) others have not used hard performance criteria, which reduces the level of confidence in the reported associations; and (3) "studies conducted with a contingency theory framework do not demonstrate conclusively that variation in the design of organizations operating in similar structures will have serious consequences for their levels of performance" [Child, 1977, p. 181].

Conclusions

The literature on structure-performance relationships is among the most vexing and ambiguous in the field of management and organizational behavior. Evaluations and generalizations concerning the nature and directions of these relationships are tenuous. Our review has underscored the relative lack of generalizability of research in the area and the need for sound research.

Knowledge of structure-performance relationships can be augmented in several ways. *First*, as might be expected, more research is required. This is a traditional prescription, of course, but it is especially appropriate in this instance. The association between organization size and absenteeism/turnover, for example, heralded as fundamental organizational variables, has been examined on only two occasions [Ingham, 1970 (turnover & absenteeism); Reimann, 1975 (turnover)] in some 15 years. Despite voluminous literature on job scope, enrichment, enlargement, and related topics, the associations between formalization/standardization and performance have been examined at the subunit level on only six occasions (see Table 3). Under the circumstances, a call for more research is more than convention.

Second, as noted earlier, hard measures of performance should be used as dependent variables. Arguably, supervisor appraisals, self-perceptions, and similar soft measures of performance are not indicative of bottom-line organizational performance: sales, gross profit, production, efficiency, commissions, and so on. In the area of specialization/complexity and performance, there are no studies that have used hard performance data. Since 1960, there have been three studies that have relied on hard performance data to investigate relationships between organization size and performance.

Third, attempts should be made to shift from a near-exclusive emphasis on managers and professionals to one that includes blue collar and nonprofessional employees, especially in the area of "structuring" activities. A cursory review of the studies involving specialization, formalization/standardization, and centralization illustrates this point. One study [Reimann, 1975] addressed specialization and performance of nonprofessional employees. The overwhelming preponderance of the studies in the area of formalization/standardization and centralization used managers and professionals as subjects.

It may be that variations in structure do not affect the performance of blue collar or nonprofessional employees whatsoever. There may be relatively little opportunity for discretionary behavior in the blue collar and nonprofessional occupations compared to managerial positions. Minor variations in the structural components of organizations may not affect prescribed behavior but rather manifest themselves in the discretionary behaviors of managers and professionals. Inasmuch as so little is known of structure-performance relationships and of the blue collar/nonprofessional employee, this remains an empirical question.

Fourth, the studies that have been reviewed are cross-sectional. Longitudinal studies in the area of structure-performance relationships would allow responsible interpretations of causality in the linkages between structure, performance, and other situational variables.

Many people would consider performance to be the single most important organizational dependent variable, whether in the public or private sector. However, our review has illustrated not only a lack of consistency but also a paucity of research in essential areas with respect to associations between structure and performance.

There may be some hesitancy to examine the alleged relationship between structure and performance. It may be that, in practice, there is no such relationship. As has been noted, the specific structure of buildings may be a major determinant of the activities of the people within them. Buildings are, presumably, designed to match their function. Buildings in Alaska have requirements unlike those encountered in desert communities. Coliseums are not generally constructed to accommodate preschool soccer games. Office buildings do not have the same characteristics as factories. Environment, size, and technology affect the responsible design of buildings. The key may be in the "relatively wide guidelines" in which structural variations are seen. In other words, to affect behavior or organizational performance, variance in structure must exceed some threshold. Presumably, the difference between a room of 2,000 vs. 2,400 square feet would not substantially affect the behavior of its occupants; however, individuals who work in an 800-square-foot room may behave quite differently in a 4,800-square-foot room.

The fundamental point is that differences in span of control, formalization/standardization, and other structural dimensions may not exceed the threshold required to affect behavior. "Organizational architects" design their structures to match function. While there will be variations in the structure of organizations, they may remain within a "reasonable" range in which there will be no difference in performance attributable to structure. A reliance on this view may have discouraged research into the area of structure-performance relationships. What is more important, this threshold phenomenon may partially explain the mixed, ambiguous, and near-zero associations reported in the literature. Even so, this is conjecture and the relationships between structure and performance remain empirical questions worthy of concentrated investigation.

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Received 11/15/78