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Structure and Performance:  
A Critical Review

by

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STRUCTURE AND PERFORMANCE:  
A CRITICAL REVIEW

ABSTRACT

Although performance is the quintessential dependent variable in organizational behavior, its association with structure has been largely ignored. Distinctions are drawn between "hard" and "soft" performance criteria, and "structuring" and "structural" dimensions of structure are utilized in the analysis. Recommendations for future research are offered.

## Structure and Performance:

### A Critical Review

Organizational structure may be considered the anatomy of the organization, providing a foundation within which organizations function. The structure of organizations is believed to affect the behavior of organizational members. As Hall (29) noted, this belief is based on a simple observation. Buildings have halls, stairways, entries, exits, interior walls, and roofs. The specific structure of a building is a major determinant of the activities of the people within them. Similarly, behavior in organizations is influenced by the organizing structure. The influence of this dimension, although not as apparent as those of a building, is assumed to be persuasive.

Appropriate units of structure for organizations are not interior walls or room size. Rather, the focus is on the size of the organization or subunit, span of control, number of specialties and vertical span. However, the building analogy remains valid, because as organizational structure varies, the behavior of organizational members may be affected.

All organizations have structure. Hall (29) suggests that structure serves two basic functions, each of which is likely to affect behavior. "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 in which the organization's activities are carried out" (29, p. 109).

Given the potential impact of structure on organization, the belief that performance is related to the manner in which organizations structure their processes and employees is not surprising.

Organizational structure has been subject to recent review (16,25,39, 58,73). 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 (39) treat the issue conceptually. Scott (73) examined the impact of technology on selected structural variables. Others (25,58) reviewed the structural literature with respect to technology and environment. Cummings and Berger (16) conservatively estimated that within the last decade nearly fifty research studies have examined the relations of organizational structure to members' attitudes and behavior. However, their review considers performance infrequently. Porter and Lawler's (66) earlier review was primarily focused on attitude, as 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. This paper examines the literature which addresses the empirical relationships, if any, between structure and performance.

#### PERFORMANCE

Organizational "performance" or "effectiveness" as a dependent variable with structure has been envisioned and measured in various ways. The focus in this review relies heavily on "hard" performance criteria: sales, gross profit, production, commissions and services rendered (non-profit sector). Supervisory appraisals and evaluations, self perception, and similar measures will be considered "soft" and less indicative of "bottom line" organizational performance.

No assumptions whatever of association between attitude and performance are made. Empirical research relating structure to such factors as job satisfaction, needs, alienation, role conflict and ambiguity which does not explicitly identify performance as a dependent variable will not be considered to affect performance.

### STRUCTURAL DIMENSIONS

The term "structure" embodies a variety of concepts. Structure has been atomized into component parts, referred to as structural dimensions. Their exact nature and whether they are proper atomizations has 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 which appear most consistently in the literature are utilized irrespective of the particular models from which they have been abstracted.

-- Insert Table 1 here --

Campbell, Bownas, Peterson, and Dunnette (12) suggested a useful distinction between "structural" and "structuring" characteristics of organizations. "Structural" qualities of organization refer to its physical characteristics like size, span of control and vertical span. In contrast, "structuring" refers to policies and/or activities occurring within the organization which prescribe or restrict the behavior of organizational members. The dimensions under review have been so arranged:

#### Structural

Size/subunit size  
Span of control  
Vertical span  
Administrative intensity

#### Structuring

Specialization  
Formalization  
Centralization

## ORGANIZATIONAL SIZE/SUBUNIT SIZE AND PERFORMANCE (Table 2)

Early research presented an ambiguous picture with respect to association between size of the organization or subunit and performance. Several studies indicated a negative relationship (36,40,46,77). Argyle, Gardner, and Cioffi (2) reported the opposite. They found a slight tendency for larger work groups to outperform smaller groups. In a study of automobile dealerships no association was found (36). Finally, Herbst and Revans in three studies (31,70), comparing size with retail sales in two cases and output per coal miner in a third, found a curvilinear relationship. Middle sized subunits outperformed both larger and smaller units.

More recent evidence is less ambiguous (see Table 2). Hrebiniak and Alutto (35) utilizing cost per patient day as a measure of performance, found a negative relationship in a study of hospital departments. Apparently, as the size of inpatient psychiatric departments increases, the cost per patient day increases as well. Other studies (8,15) using reading and mathematics achievement scores, drop out, and college attendance rates as measures reported no association between size and performance. Studies of high schools, industrial firms, and community colleges have also reported zero association between size and performance. These studies, however, have used relatively "soft" performance criteria: self assessments of performance by executives comparing their operations with others (69), ratings of teaching performance by college presidents and deans (24), and "degree of effective operations" which is undefined (44).

-- Insert Table 2 here --



In summary, organizational size and performance has been investigated on six occasions in the last decade. Five of the six reported no association between size and performance. "Hard" performance criteria are met on only three studies. In addition, measurement can be problematic. For instance, Hrebiniak and Allutto (35) used number of beds as an indication of organizational size, a common practice in differentiating hospitals. Bidwell and Kasarda (8) used average daily student attendance, an accepted criterion of school size. Reimann (69) counted the number of full time employees. Each method is reasonable. However, any comparison of these studies is difficult as the measures are neither identical nor interchangeable.

Moreover, Reimann (69) and Bidwell and Kasarda (8) utilized a logarithmic conversion to normalize size. Others did not do so. Again, this makes comparison difficult. Nonetheless, based on recent literature, the preponderance of evidence suggests that there is no systematic relationship between size and performance.

#### ORGANIZATIONAL SIZE AND INCIDENCE/DURATION OF STRIKES (Table 3)

Early investigation supported a positive association between the size of organization and incidence of strikes. Cleland (14) 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 (zero) strikes. Revens (70), in a study of British coalmining, reported a positive correlation between size and production lost due to strikes.

"Production lost due to strikes" would seem to be a function not only of the number of strikes, but also their duration. Presumably, one extended strike would affect production as greatly as several shorter work stoppages.

Based on these studies one might conclude smaller organizations are less likely to have serious labor problems than larger ones. Porter and Lawler (66), however, advised caution with this interpretation. They suggested that it may not be the size of operation but the type of technology utilized which is associated with strikes. Empirical support for this position was provided by Eisele (21). In a study of manufacturing organizations classified according to Woodward's "technical complexity" (78), a curvilinear relationship was found between size and strike frequency. Plants with technology Type II, large batch and mass, experience a higher strike frequency than plants with Type I, unit and small batch, and Type III, process, technologies.

Shorter and Tilley (74) 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 (11), however, did not validate this finding for the United States. They report a negative relationship for incidence and zero association with duration. For 1968 to 1970, larger concentrations of workers inhibit the frequency of strikes, rather than facilitating them. This is compatible with Olson (56) who has suggested that the availability of large pools of labor reduces the efficacy of strike activity.

The identification of 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, are generalizable across nations. Therefore both Revan (69, w/British Industry) and Shorter and Tilley (73, w/French Industry) have limited applicability. Second, the impact of unionization has been largely ignored. Cleland (14) included non-union

plants in his study as did Eisele (21). Britt and Galle (11) controlled for unionization. It remains an empirical question whether unionized plants have different strike patterns by both incidence and duration vis a vis organizational size. Perhaps large unions and large organizations employ professional negotiators. What of the 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 strike in large industries by chance alone. It is, therefore, fair to state that the relationship, if any, between organization size and incidence of strike, has not been determined.

-- Insert Table 3 here --

#### ORGANIZATIONAL SIZE/SUBUNIT SIZE AND ABSENTEEISM/TURNOVER (Table 4)

Excessive levels of absenteeism and turnover undoubtedly affect organizational performance. However, it is not clear that turnover and absenteeism per se affect performance. It has been suggested that absenteeism is a coping behavior. It may allow sufficient flexibility with which employees can adjust and react to low levels of job scope. Turnover may be viewed similarly. Economists argue that low levels of turnover impact factor mobility. With these provisions in mind, absenteeism and turnover may be considered as independent variables which may affect performance.

In recent years there has been a relative paucity of research in these areas; only one study has addressed absenteeism and organizational size in the last seventeen years. Ingham (37) found a positive correlation which is consistent with earlier studies. Table 4 reveals that ten of twelve investigations report positive relationships (1,5,36,37,41,53,70). One study considered white collar workers and reported no association (53). The preponderance of evidence indicates a definite positive relationship between size and absenteeism in blue collar workers.

With respect to turnover, two recent investigations (37,69) found no association between organizational size and turnover in industrial organizations. This report is consistent with Argyle, Gardner, and Cioffi (2). Three other investigations, however, reported positive relationships between organizational or subunit size and turnover (36,41,45) in organizational departments and automobile dealerships. On the weight of more recent evidence, there may be no association between organizational size and turnover.

-- Insert Table 4 here --

#### ORGANIZATIONAL SIZE AND CONTROL, INSTITUTIONAL MANAGEMENT, AND INNOVATION (Table 5)

Control, institutional management, and innovation have been linked recently to organizational size. These dimensions will be reviewed as novel approaches to structure. However, none of the relevant dependent variables in this section meet the adopted "hard" performance criterion. There is no empirical evidence relating them directly to organizational performance.

## Size and Control (Table 5)

Reeves and Woodward (68) posit that as organizations increase in size, hierarchical control is increasingly more difficult to exert. Consequently, management introduces impersonal control processes into systems to influence and/or regulate the behavior of those employed. These controls operate more or less impartially and automatically. Presumably, without these sundry mechanisms, performance is affected. Ouchi (57) concurs in part but separates control into two patterns: behavioral control and output control.

Behavioral control amounts to personal surveillance. It requires a clear appreciation of means-end relationships. The process by which inputs are transformed into outputs by individuals must be understood or generally agreed upon. Given an understanding of the process, the behavior of employees could be controlled and the desired output assured.

Output control requires no such understanding or agreement of the process. If a clear notion of output nature exists, a person may evaluate the output and ignore process. For instance, if management knows that 142 units is the required output per day, a simple counting will suffice in lieu of personal surveillance. If, indeed, 142 units or better is consistently produced, the particular behavior of employees can be ignored. There is, in other words, no need to control their behavior (behavioral control) as their output is in order (output control).

Ouchi (57) found that large organizations are more likely to establish measures of output control. Failing to do so, particularly for large organizations, amounts to a serious risk of control loss. Ouchi and Maguire (59) reported that management will rely relatively more on output control as need to provide legitimate evidence of performance increases. Theorists have

have suggested the amount of total control in an organization is related to its effectiveness (10,49,75,76). It may follow that output control, a factor in total control, is related to organizational effectiveness.

#### Size and Institutional Management (Table 5)

Pfeffer (62) suggested that management theory has been dominated by concern for the management of persons within organizations. While managing people within organizations may be critical to the success of the enterprise, the management of the organization's environment, i.e., competitors, government regulatory agencies, creditors, public-at-large and suppliers may be as critical. The organizational-environmental linkage may be referred to as management at the institutional level. Dill's (18) notion of "task environment" and Evans' (22) "organizational set" model are similar analyses.

The process by which organizations seek to predict and control contingencies in their environment may be essential for survival of the organization. Hrebiniak and Alutto (35) reported that as the size of hospital departments increases there is a concomitant increase in boundary spanning and buffering activities. Leifer & Huber (42) have also reported a positive relationship between boundary spanning and size in health and welfare organizations. Based on these investigations, it would appear that institutional management is related to organizational size.

#### Size and Innovation (Table 5)

Innovation may be an essential component of organizational effectiveness. A key dimension in organizational performance is the capacity and ease by which technological changes can be incorporated (20,26,27). Betz (7)

reported positive correlations between size of schools and normative diversity. A greater range of norms and social perspectives presumably leads to a more fertile, innovative environment. Baldrige and Burnham (3) found that the size of school districts is positively related to innovative behavior. Another study supported this general contention. Moch (55), with data gathered in hospitals nationwide, concluded that hospital size is positively related to the adoption of innovation.

Whether innovative companies are more effective is an empirical question. Although organizational size is positively associated with innovation, the direct impact on performance remains to be established.

-- Insert Table 5 here --

#### SPAN OF CONTROL AND PERFORMANCE (Table 6)

Nearly fifteen years ago Porter and Lawler (66) indicated that there was little, if any, empirical study of span of control. The same could be said today. Worthy (80), in comments contrary to classical notions, indicated that large spans were superior as they provide opportunity for personal initiative and better communication. Unfortunately, he did not provide empirical support.

Woodward (79) reported a curvilinear relationship between performance and span with first level supervisors. It may be suggested that substantial differences might occur in considering blue collar, rather than first level supervision. Also, these results were obtained by tricotomizing companies by technical complexity (unit, batch, process). There is evidence that type of technology may determine which span of control for first level supervisors is optimal for producing high performance.

In the only recent investigation, Farris (23) reported positive correlations between performance measures and span of control. Two of the performance measures are "hard": number of patents, technical reports. Two others are "soft": ratings of two supervisors.

It is difficult to summarize this research. There is some evidence that wide spans of control may be effective. However, this is conditional. Farris (23) investigated engineers; Woodward (79) first level supervisors. There is absolutely no evidence concerning the relationship of span of control and performance of blue collar, non-managerial, or non-professional employees.

#### VERTICAL SPAN AND PERFORMANCE (Table 6)

Span of control and vertical span are closely related. Vertical span 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, i.e., span of control and vertical span, are interchangeable. Worthy for instance, states "flatter, ...structures tend to create a potential for more effective supervision..." (79, p. 179). Again, no data have been reported to support this contention. Woodward's (79) work may be interpreted as relating to vertical span as well.

Several studies directly address vertical span. Meltzer and Salter (52) examined the productivity of physiologists. A positive association was found between number of publications and vertical span. Blau (9) reported



that tall organizations tend to have more explicit promotion regulations emphasizing merit rather than seniority. Although a "soft" measure, it is one which might affect performance. Carzo and Yanouzas (13) investigated this relationship in a laboratory format. The amount of time taken to complete decisions did not differ significantly between tall and flat structures: Flat organizations required more time to resolve conflict and coordinate effort: Tall structure performed better with respect to profit and rate of return on revenue. Lastly, Ivancevich and Donnelly (38) 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 number of retail outlets visited.

Summarization of vertical span relationships is problematic. It is difficult to generalize across findings with professionals (52), laboratory studies (13), and white collar employees (9,38) with both positive and negative associations reported. Relationships, if any, between vertical span and performance, cannot be stated definitively.

-- Insert Table 6 here --

#### ADMINISTRATIVE INTENSITY AND PERFORMANCE (Table 7)

For these purposes administrative intensity is defined as the number of administrative personnel (managers, professionals, and clerical workers) divided by the number of production workers (craftsman, operatives, and laborers). Pondy (64) with data accumulated from 45 manufacturing industries, found a range of administrative intensity from 8.7% in the logging industry

to 131.1% in the drug industry. It has been suggested that levels of administrative intensity are associated with performance. Melman (50,51) identified a large increase in administrative overhead for United States manufacturing industries. He argued the growth in administrative intensity is not related to increases in labor productivity. Rather, they are separate processes; increases in administrative ratio is not positively associated with performance. In support, Bidwell and Kasarda (8) found a negative relationship between administrative intensity and performance in school districts.

Others (17,34) are not convinced. They posit that both labor productivity and administrative intensity can be considered main factors resulting in increases in industrial productivity. Hildebrand and Liu (33), for example, reported a positive relationship between costs of administrative overhead and levels of production.

Pondy's investigation of the phenomenon is the only empirical work which directly compares administrative intensity with performance. For a sample of 45 manufacturing industries, administrative intensity was found to vary inversely with value added per production worker (64). However, Dogramici (19) questioned certain assumptions implicit in Pondy's model. Pondy (65) concurred, in part, with several of Dogramici's criticisms.

Under the circumstances, summarization, again, is not possible. There are those who report positive (17,34,64) and negative (8,50,51) associations. The alleged relationship between administrative intensity and performance remains unsettled.

-- Insert Table 7 here --

## STRUCTURING DIMENSIONS

As previously mentioned, "structuring" dimensions refer to policies and/or activities occurring within organizations which prescribe or restrict behavior of organizational members. In contrast, organizational size, span of control and administrative intensity do not describe or limit the behavior of role incumbents in organizations. Rather, they are dimensions which define characteristics of the physical milieu in which behavior occurs. Specialization, formalization/standardization and centralization, conversely, do prescribe behavior.

### SPECIALIZATION/COMPLEXITY AND PERFORMANCE (Table 8)

Specialization is defined as the number of different occupational titles or different functional activities pursued within an organization (60,67). Hage and Dewar (28) 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 which used performance as a dependent variable. Corwin (15) and Reimann (69) in studies of high schools and manufacturing firms reported no significant relationship. Several other investigations reported positive associations (3,6,28). Unfortunately, none meet the "hard" performance criterion. Beck and Betz (6) reported inter-stratum conflict is decreased by specialization in elementary and secondary schools. "Inter-stratum" refers to conflict among organizational units of dissimilar authority over allocation of control within the organization (6,63). The relationship between inter-stratum conflict and performance, however, has not been empirically determined. Hage and Dewar (28) and

Baldrige and Burnham (3) found a positive association between specialization and innovation in both school districts and health and welfare organizations. Again, although the notion is intuitively appealing, there is no empirical link between innovation and performance.

The lack of "hard" performance criteria, coupled with reports of no correlation (15,69) support the conclusion that no association between specialization and performance has been demonstrated.

-- Insert Table 8 here --

#### FORMALIZATION/STANDARDIZATION AND PERFORMANCE (Table 9)

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/or procedures of members of the organization. Formalization in this sense might be a job description outlining those activities expected in that job classification. For instance, "the assistant personnel manager will be responsible for the testing of prospective employees". Notice, although this statement is in writing and 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 could fulfill this responsibility. Standardization would specifically outline those procedures by which the "testing of prospective employees" should be accomplished. Formalization, then, refers to what you are asked to do. Standardization refers to how you are 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 occurs. Role ambiguity presumably affects member attitude and performance. Conversely, formalization and standardization may limit job scope, resulting in boredom, alienation, job dissatisfaction, absenteeism, turnover, and low output. This immediately suggests a curvilinear relationship wherein there may be an optimal level of formalization/standardization which reduces role ambiguity yet maintains reasonable levels of job scope.

Empirical evidence neither supports nor rejects this observation. Research on health and welfare agencies (28), manufacturing employees (72), and county administrators (71) found no association between formalization and performance. Harrison (30) and Baum and Youngblood (4) reported positive associations. Unfortunately, none of the research utilized "hard" performance criteria. Perceived role performance (30), peer and supervisory ratings (72), laboratory simulation (4), innovative behavior (28), and role ambiguity (71) were used as measures of performance.

Aside from issues of performance measurement, non-zero reports refer to scientists and students in a laboratory setting. The performance propensities of students and scientists relative to formalization have questionable generalizability to blue collar and/or non-professional personnel. It can be concluded that an association between levels of formalization and performance has not been convincingly demonstrated.

-- Insert Table 9 here --

#### CENTRALIZATION AND PERFORMANCE (Table 10)

Centralization is involved with 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 each and every decision is the ultimate in centralization. The minimum degree of centralization (often referred to as decentralization) would exist in an organization if decision making authority were exercised equally by every member of the organization. Degrees of centralization, then, refer to dispersion of decision making authority throughout the organization.

Several studies found no relationship between centralization and performance (24,28,48,49,69,78). Remaining studies unanimously report negative relationships between centralization and performance (6,30,43,47,54,61,75,76). Summarization should indicate centralization negatively related to performance, but the present authors are disinclined to do so for two reasons. First, of fifteen reported investigations, only three utilized "hard" measures of performance. The remainder measured alienation (54), innovation (28), intra-stratum conflict (6) and a variety of performance perceptions by self and supervisors (24,30,47,49,49,75,76). Three studies which utilized "hard" performance criteria compared centralization and performance on professionals (61) and managers (10,43), finding a zero and two negative associations.

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

-- Insert Table 10 here --

## CONCLUSIONS

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

Many people would consider performance to be the single most important organizational "dependent variable", whether in the public or private sector. Yet, this review has illustrated not only a lack of consistency but a paucity of research in essential areas with respect to associations between structure and performance. Relative to studies which examine relationships between structure and attitudes, performance as a dependent variable is largely ignored in the literature on structure.

There may be some hesitancy to examine the alleged relationship between structure and performance. Perhaps there is a prejudice that no such relationship exists. Certainly, this would operate to restrict investigations. As has been noted, the specific structure of a building may be a major determinant of the activities of the people within them. Buildings are designed to match their function. Buildings in Alaska have requirements unlike those encountered in desert communities. Coliseums are not generally constructed to accommodate pre-school soccer games. Office buildings do not have the same characteristics as factories. Environment, size, and technology affect the responsible design of the buildings. Even so, within relatively wide guidelines, structural variations are seen within buildings utilizing similar technologies in similar regions.

Presumably, whether a building has six or eight stories will not significantly affect the behavior of those individuals working within, whereas the difference between a single story versus a forty-eight story building might. The difference between two thousand square feet and twenty four hundred in a room probably doesn't impact behavior, but individuals working in an eight hundred square foot room may behave quite differently than in one of four thousand feet. The key may be in the "relatively wide guidelines" in which structural variations are seen. In other words, to affect behavior the variance in the structure of organizations may have to exceed some threshold. Clearly, there are variations in the structural components of organizations, but perhaps in most organizational situations, differences in their spans of control, vertical spans, levels of formalization/standardization, and other structural dimensions do not exceed the threshold required to affect behavior.

Performance may be affected systematically only at the extreme as with very crowded compared to very spacious working accommodations. Perhaps the extremes necessary to see a systematic difference in performance are not usually extant in organizations. "Organizational architects" design their structures to match function. There will be variations even in organizations with similar charters. These variations, however, may remain within a "reasonable" range in which there is no difference in performance attributable to structure. A reliance on this view may have discouraged research into the area of structural-performance relations. More importantly, this "threshold" approach may partially explain the mixed, ambiguous, and near zero associations which are reported in the literature. Even so, this is conjectural and remains an empirical question worthy of concentrated investigation.



There may be practical difficulties as well. Obtaining "hard" performance data may be formidable both conceptually and practically and this may deter research relating structure to this dependent variable. However, the collection of these data can and has been accomplished. For instance, the measurement of the "performance" of schools of teachers is admittedly problematic. What is "bottom line" performance for a school or an educator? Corwin (15) and Bidwell and Kasarda (8) utilized such indices as student reading and math achievement scores, drop out rates, student absenteeism, and percentage entering college. Although subject to criticism, these are responsible attempts to determine "hard" measures of performance. Arguably, they are an order of magnitude improvement over "perceptions of administrators" and "student evaluations of teacher effectiveness" as indicators of performance.

There is also a strong tendency to use managers and professionals as subjects for structural-performance research as access may be easier to this group than to blue collar and/or non-professional workers. This is unfortunate. A body of recent theory concerning notions of job enrichment, job enlargement, socio-technical systems, and job scope rely on the fundamental assumption that the performance of workers is related to structural dimensions such as specialization, formalization, and standardization. Even so, little empirical research has been undertaken with blue collar and non-professional employees as subjects in the area of structure-performance relations.

Given the above problems, knowledge of structure-performance relations can be augmented in three ways. First, as might be expected, more research is required. This is a traditional prescription, of course, but we feel it is especially applicable in this instance. For example, the association of organization size with turnover and absenteeism, all heralded as funda-

mental and important organizational variables, has been examined on a mere three occasions (37, turnover & absenteeism; 69, turnover) in some fifteen years. Span of control, a so called "principle of organization" has been subject to only two investigations (79,80) neither of which may be generalized with confidence. Despite voluminous literature on job scope, enrichment, enlargement, socio-technical systems and related topics, the associations between formalization/standardization and performance has been examined on only five occasions (4,28,30,71,72), none of which utilized "hard" performance criteria. Under the circumstances, a call for more research is more than convention.

Second, as alluded earlier, "hard" measures of performance should be utilized as dependent variables. In the area of specialization/complexity and performance, there are no studies which used "hard" performance data. With respect to formalization/standardization, again, there are none. Since 1960, three studies have relied on "hard" performance criteria with respect to organizational size and performance. "Hard" measures of performance are required for future research. Or, at the least, "soft" measures -- such as role ambiguity and alienation among a variety of others -- must be related to behavior, and reliance on attitude needs to be reduced.

Finally, attempts should be made to shift from an almost exclusive emphasis on managers and professionals to one which includes blue collar and/or non-professional employees, especially in the area of "structuring" activities. A cursory review of the studies involving specialization, formalization/standardization, and centralization illustrates this position. One study (69) addressed specialization and performance of non-professional employees. Schuler (72) examined the association between formalization and

the performance of manufacturing employees. The overwhelming preponderance of the remaining studies in the area of centralization and performance has used managers and professionals as subjects.

It may be that variations in structure do not affect the performance of blue collar and/or non-professional employees whatsoever. There may be relatively little opportunity for discretionary behavior in the blue collar/non-professional 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 behavior of managers and professionals. Inasmuch as so little is known of structure-performance relations and the blue collar/non-professional employee, this remains an empirical question.

In summary, there are three fundamental needs with respect of structural-performance relations: more research, "hard" performance criteria as dependent variables, and a shift from reliance on managerial/professional employees to one which includes blue collar/non-professional subjects.

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## FOOTNOTES

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Present Review	Structural				Structuring		
	Size	Span of Control	Vertical Span	Administrative Intensity	Specialization	Formalization/Standardization	Centralization
Hall 1962					Complexity	Formalization/Specialization	
Porter & Lawler 1965	Size	Span of Control	Org. Levels 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,b					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 1973		Subordinate ratio	Vertical Span		Role Specialization	Formalization/Standardization	Centralization
Hrebiniak 1974		Closeness of Supervision				Extent of Rule Usage	Control, Autonomy Participatio
James & Jones 1976	Size	Configuration			Specialization	Formalization/Standardization	Centralization

TABLE 2

Structural Dimension	Investigators	Sample	Relationship
ORGANIZATIONAL SIZE/ SUBUNIT SIZE w/ PERFORMANCE	Marriott 1949	work groups	negative
	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	negative
	Katzell, Barrett, & Parker 1961	company divisions	negative
	Indik & Seashore 1961	departments	negative
	Indik & Seashore 1961	automobile dealerships	zero
	Hrebiniak & Allutto 1970	hospital departments	negative
	Corwin 1970	high schools	zero
	Mahoney, Frost, Crandell' & Weitzel 1972	business & industrial firms	zero
	Fiedler & Gillo 1974	community colleges	zero
	Reinmann 1975	school districts	zero
Bidwell & Kasarda	school	zero	

Structural Dimension	Investigators	Sample	Relationship
ORGANIZATIONAL SIZE w/ INCIDENCE OF STRIKE	Cleland 1955	factories	positive
	Revans 1958	mines	positive
	Shorter & Tilley 1971	industry	positive
	Britt & Galle 1974	industry	negative (incidence)
	Eisele 1974	manufacturing plants	zero (duration) curvilinear (dependent on technology utilize

TABLE 4

Structural Dimension	Investigators	Sample	Relationship
ORGANIZATIONAL SIZE/ SUBUNIT SIZE w/ ABSENTEEISM	Kerr, Koppelmier & Sullivan 1951	departments	positive
	Metzner & Mann 1953	white collar workers	zero
		blue collar workers	positive
	Acton Society Trust 1953	factories	positive
	Hewitt & Parfit 1953	departments	positive
	Argyle, Gardner & Cioffi 1958	work groups	curvilinear
	Revans 1958	gas works	positive
		factories	positive
	Baumgartel & Sobol 1959	factories	positive
		airline location departments	positive
Indik & Seashore 1961	departments	positive	
	Ingham 1970	industrial organizations	positive
ORGANIZATIONAL SIZE/ SUBUNIT SIZE w/ TURNOVER	Kerr, Koppelmier & 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
	Reimann 1975	manufacturing organizations	zero

TABLE 3

Structural Dimension	Investigators	Sample	Relationship
ORGANIZATIONAL SIZE w/ CONTROL	Reeves & Woodward 1970	industrial organizations	positive
	Ouchi & Maguire 1975	department stores	positive
	Ouchi 1977	department stores	positive
ORGANIZATIONAL SIZE w/ INSTITUTIONAL MANAGEMENT	Hrebiniak & Allutto 1973	hospital departments	positive
	Leifer & Huber 1977	health & welfare agencies	positive
ORGANIZATIONAL SIZE w/ INNOVATION	Betz 1972	elementary schools	positive
	Baldrige & Burnham 1975	school districts	positive
	Moch 1976	hospital departments	positive

TABLE 6

Structural Dimension	Investigators	Sample	Relationship
SPAN OF CONTROL w/ PERFORMANCE	Worthy 1950	department store	positive
	Woodward 1958	industrial organizations	curvilinear
	Farris (Cummings & Berger 1976)	engineers	positive
VERTICAL SPAN w/ PERFORMANCE	Meltzer & Salter 1962	physiologists	positive
	Blau 1968	government agencies	positive
	Carzo & Yanousas 1969	lab study	positive
	Ivancevich & Donnelly 1975	salespersons	negative



TABLE 7

Structural Dimension	Investigators	Sample	Relationship
ADMINISTRATIVE INTENSITY w/PERFORMANCE	Melman 1951	manufacturing	negative
	Melman 1956	manufacturing	negative
	Holland 1963	manufacturing	positive
	Hildebrand & Liu 1965	manufacturing	positive
	Delehanty 1968	manufacturing	positive
	Pondy 1969	manufacturing	positive
	Bidwell & Kasarda 1975	school districts	negative

TABLE 8

Structural Dimension	Investigators	Sample	Relationship
SPECIALIZATION w/ PERFORMANCE	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

TABLE 9

Structural Dimension	Investigators	Sample	Relationship
FORMALIZATION w/ PERFORMANCE	Hage & Dewar 1973	health & welfare agencies	zero
	Harrison 1974	scientists	positive
	Schuler 1975	manufacturing employees	zero
	Baum & Youngblood 1975	students (lab)	positive
	Rogers & Mulnar 1976	county administrators	zero

TABLE 10

Structural Dimension	Investigators	Sample	Relationship
CENTRALIZATION w/ PERFORMANCE	Weiss 1957	companies	zero
	Tannenbaum 1961	voluntary associations	negative
	Bowers 1964	insurance companies	zero
	Miller 1967	engineers	negative
	McMahon & Perritt 1971	managers	zero
	Hage & Dewar 1973	health & welfare organizations	zero
	Luke, et. a. 1973	retail food organization	negative
	Fiedler & Gillo 1974	community colleges	zero
	Harrison 1974	scientists	negative
	Sorensen & Baum 1975	voluntary organizations	negative
	Beck & Betz 1975	elementary & secondary schools	negative
	Reimann 1975	manufacturing	zero
	Pennings 1976	brokerage firms	negative
McMahon & Ivancevich 1976	managers	zero	
McMahon 1976	managers	negative	