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The Effect of Organization Size and Structure on Transit Performance and Employee Satisfaction: A Literature Review

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**The Effect of Organization Size and Structure on
Transit Performance and Employee Satisfaction:
A Literature Review**

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THE EFFECT OF ORGANIZATION SIZE AND STRUCTURE ON TRANSIT PERFORMANCE AND EMPLOYEE SATISFACTION

Organizational structure may be considered the anatomy of the organization. It provides the structural foundation and the framework within which the organization functions. The structure of organization is believed to affect both the attitudes and behavior of organizational members. 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 determinant of the activities of the people within them. Similarly, behavior in organizations is influenced by the organizing structure. The dimensions may not be as apparent as those of a building, but the influence is pervasive.

Appropriate units of structure for organizations are not interior walls or size of rooms. Rather the focus is on the size of the organization or subunit, span of control, number of specialities and vertical span. The analogy remains valid, because organizational structure varies, and these variations may affect the attitudes and/or behavior of organizational members.

All organizations have structure. Hall (1977) has observed that structure serves two basic functions, each of which are likely to affect attitudes and behavior.

"First, structures are designed to minimize or at least regulate the influence of individual variations on the organization. Structure is imposed to ensure that individuals conform to the requirements of the organization and not vice versa.

Second, structure is the setting in which power is exercised (structure also sets or determines which positions have power in the first place), in which decisions are made (flow of information which goes into a decision is largely determined by structure), and in which the organization's activities are carried out (Hall 1977, p. 109)."

Given the potential impact of structure on organization, it is not surprising there is a widespread belief that performance of a transit property is related to the manner in which the property organizes (structures) its processes and employees. However, despite ubiquity and importance, structural research has not been conducted in transit. Even in non-transit organizations, research on structure is among the most ambiguous, conflicting and least understood in the field. For many structural dimensions there is a paucity of research. Therefore, evaluation is difficult and conclusions tenuous. These factors, the ubiquity of structure, its importance, the lack of transit research, and little generalizability in non-transit research underscore the need for this research effort.

Research in this area accomplishes several objectives. First, it provides descriptive data concerning the organization of transit properties. Second, continued research in structure may remedy deficiencies in the current literature. Finally, examinations into the nature of structural/attitude and structural/performance relationships in the transit industry may assist transit properties to improve their performance. Currently, there are no guidelines available to which transit property managers and supervisors may turn in structuring their organization. This has been a serious deficiency during the recent expansion of transit service.

Towards this end, a year-long field study has been undertaken to investigate the relationship between structural dimensions, attitude and behavior in sixteen California transit properties. Instruments have been developed to measure performance, attitude and structure in these properties. Indicators developed by Fielding, Glauthier and Lave (1977) will be used to assess performance. Employee attitudes will be measured by "job satisfaction" questionnaires. Various measures of organizational structure will be derived through questionnaire, interview and archival data.

The following section reviews the development of structure as an organizational variable, discusses the various dimensions of organizational structure in detail, and discusses their application to the transit industry.

STRUCTURE AND ORGANIZATIONAL BEHAVIOR

Consideration of structural impacts on performance goes back at least as far as 1776 when Adam Smith discussed the increased production of pins accomplished by dividing the task into distinct parts and having a worker perform only one of the parts of the task. This increase was attributed to increased skill of the worker doing a more specific task, reduction of time lost changing tasks, and the facilitation of machine use improving performance of each task. Since Adam Smith's classic book, the examination of structure has moved in three major and somewhat distinct directions: the bureaucratic approach to structure, the human relations approach to structure, and the contingency approach to structure. Each of these approaches will be discussed in turn prior to examining the development of the dimensions of structure and reviewing the research on structure and attitudes and performance.

THE BUREAUCRATIC APPROACH TO STRUCTURE

In more recent times the strongest support for highly structured organizations came from Max Weber (1949) who identified the bureaucratic structure, its essential elements, and argues that it was the most effective form of organization. While it is difficult to show conclusively that any one form or structure is most effective, it is safe to say the bureaucratic structure is most prevalent in today's organizations.

Management theorists have also considered structural components of work. Frederick Taylor (1911) and others of the Scientific Management School paid particular attention to the structure of work at the shop floor level.

Henri Fayol (1949) and others considered structure when advancing principles of management, including span of control, unity of command, and the scalar principle. Present management theorists still concern themselves with organization structure (Kast & Rosensweig 1970, Koontz & O'Donnell 1976, Tosi & Carroll 1976).

The bureaucratic structure of organizations has had many critics. Hegel (1807) and Marx (1844) discussed the alienation of workers resulting from their relationship to the job. Many others have identified dysfunctions of bureaucratic structures. Thorstein Veblen (see Merton 1945) suggests people may develop "trained incapacity" as a result of doing a specific task to such an extent that they become incapable of dealing with new and different tasks. Dewey (see Burk 1935) and Warnotte (1937) suggest similar difficulties with their concepts of "occupations psychosis" and "professional deformation." Merton (1945) identified other potential problems with bureaucracy: goal displacement, reliance on rules, and the impersonal treatment of clients or customers. Argyris (1957, 1964) argues there is a basic incongruity between the needs of a mature individual and the demand of the traditional organization. Highly structured organizations with much division of labor do not provide the challenge and opportunity for personal growth and self actualization which individuals seek. Victor Thompson (1961) noted two dysfunctional responses individuals might make to bureaucratic structure. One is the result of insecurity a person feels when in a position of authority but reliant upon subordinates with special skills. "Bureaupathic" behavior, the use of more and more rules, exaggerated aloofness, resistance to change, and an overinsistence on the rights of office, would likely develop. The other, which he calls "bureautic" behavior, involves striking out at the

system, personalizing every encounter, and reacting to rules as if they were designed to be personally frustrating. Both behaviors are dysfunctional to the individual and the organization. Warren Bennis (1966) suggested dysfunctions of bureaucracy relating to the overall survival of the organization. He claims the rate of change is rapidly increasing in today's society. Therefore the traditional bureaucratic structure with its inherent stability and conservative nature, will be incapable of coping with this rapid change. Organizations will have to develop more flexible designs and structures in order to survive in the future.

THE HUMAN RELATIONS APPROACH TO STRUCTURE

The highly formal structure of a bureaucracy has both costs and benefits. The question is no longer "does structure affect attitudes and performance?" but "what structure will be optimal for organizations, given the costs and benefits involved?" The famous Hawthorne studies (Mayo 1933, Roethlisberger & Dickson 1939) added another dimension to the problem by demonstrating that social as well as technical issues are involved in the relationship between structure and attitudes and performance.

Human relations theorists have emphasized the social and individual needs of the organizational member and developed typologies for organizations based upon differing approaches. Douglas McGregor (1960) in The Human Side of Enterprise identified two extremes of organizational approaches to the individual. The first, Theory X, which he claims is most prevalent, assumes the average person dislikes work, avoids it if possible, needs coercion, control, direction, and prefers to avoid responsibility. Therefore, the organization must have a high degree of control and structure in order to maintain an adequate level of performance. The second, Theory Y, which he

feels is more accurate, assumes people like to work, will exercise self direction, self control and seek responsibility. Under these assumptions the organization should have less formal structure and control.

Another popular human relations approach was developed by Rensis Likert (1967) consisting of four systems, which directly relate to the structure of the organization. "System One," exploitive autocrat, is one in which the superior does not consult at all with the subordinate. One would expect such a situation would have many rules and much formal control, and/or be highly structured. "System Two," benevolent autocrat, consists of a situation in which the superior maintains decision making authority but may occasionally solicit ideas from subordinates. Again this system is likely to be structured, but perhaps less so than "System One". "System Three," participative, involves definite attempts by the superior to get ideas and opinions from subordinates and would tend to be less formally structured. The least formally structured system would be "System Four," democratic, in which the superior always consults with subordinates, requiring greater flexibility and consequently less rigid structure.

THE CONTINGENCY APPROACH TO STRUCTURE

Both McGregor and Likert are suggesting that the most effective organization has less rigid authority and more involvement of lower level members in what had traditionally been management decisions. Their view was that all organizations would benefit from this type of structure. However, an idea was also developing in the literature that there may not be one universal structure that is best for all organizations. Burns and Stalker (1961) initiated this approach by suggesting that organizations range on a continuum from mechanistic structure, in which the organization is more flexible

and operates with less formalized procedures. The most effective structure for a given organization will depend on the stability of the environment in which it operates. Highly stable environments will be more suitable to mechanistic structures whereas unstable environments require organic structures. Lawrence and Lorsch (1967) utilized a contingency approach to structure in their theory of differentiation and integration. The critical factor in the environment, for them, is the level of uncertainty. When the environment is certain an organization can develop a highly formal structure which will be effective. However, an uncertain environment will necessitate the differentiation of the organization into subunits capable of dealing with the different areas of uncertainty. These subunits must have sufficient autonomy to deal with the changing environment but must also remain a part of the total organization and continue to work towards its goals. Therefore, the higher level of integration of the subunits will also be required.

Along with a concern for the effects of environment on structure, there has been an interest in the effects of technology. Joan Woodward (1965) investigated the effects of three types of technology: unit, small batch, and large batch production. She concluded that more formal structures were more effective in unit and large batch operation than in small batch operations.

James Thompson (1967) developed a theoretical model of the relationship between technology and structure. He identified three types of technologies: long linked, mediating and intensive. Each requires a unique control structure. He asserts that an organization will attempt to provide sufficient control at minimum cost or "group positions to minimize coordination costs" (1967, p. 57). Thompson (1967) states that, in addition to the influence of technology on structure, an organization must also deal with the influence of the environment.

He identifies two dimensions of task environment, stable-unstable and homogeneous-heterogeneous. Homogeneous and stable environments would tend to produce more traditional, standardized rule.

Identifying the influence of technology and environment upon the structure of organizations is an important step in the study of structure. The concept of one best structure for all organizations may be no longer applicable. There is a shift in the focus of study from a search for the universal structure to a search for the factors important to the determination of the most applicable structure for a particular organization. This implies that industries might vary in the type of structure that is most effective. Geographic location, political influence, and dependency upon other organizations will influence the relationship between structure and attitudes and performance.

Study of the mass transportation industry is particularly valuable because it offers the opportunity to examine a variety of organizations in the same industry which represent a broad range of situational characteristics. It is possible to explore structural characteristics common to the mass transportation industry and examine the impact of situational characteristics on the relationship between structure on attitudes and performance in the transportation industry.

Transit is also of interest to organization specialists because of the different requirements within the same organization. It might well be that the operational and financial departments of the transit organizations would respond more favorably to a mechanistic structure, whereas the planning and marketing departments would respond to an organic structure. The information to be gathered in the field studies about employees attitudes and company performance will allow the testing of these generalizations.

THE DIMENSIONS OF STRUCTURE

The term "structure" embodies a variety of concepts which may be atomized into its component parts referred to as structural dimensions. These dimensions are believed to be associated with the attitudes and performance of organizations and their members.

One of the first structural dimensions to be identified was span of control, i.e., the number of subordinates who report directly to a supervisor. Henri Fayol discussed this in 1949. He considered five or six the maximum number a person above the level of foreman should supervise. A foreman over a simple and routine task may supervise as many as twenty. In 1937, Graicunas demonstrated the number of possible interactions increase very rapidly when the number of members of the group increased. This, he argued, was good reason for keeping the span of control small. Worthy (1950) challenged this view, suggesting spans of control of fifty can be managed successfully. Span of control continues to be a dimension of interest in the study of structure (Indik 1968, Holdaway & Bowers 1971, Meyer 1972).

Another dimension which has received attention is the size of the organization. The size of the organization may be related to attitudes and performance (Porter & Lawler 1965, Caplow 1957, Grusky 1961, Chapin 1951). Large organizations usually have more complex structure than small organizations. This difference may impact the attitudes and performance of organizational members.

Rather than consider single dimensions of structure, sets of dimensions have been described which encompass structure. Attempts have been to identify

those aspects of structure which impact not only other structural variables, but attitude and performance as well. Sells (1964), for instance, offered these dimensions: (a) size, (b) differentiation, (c) autonomy with respect to outside control, (d) control (centralization, flexibility, communication), and (e) role structure. These dimensions were selected from a theoretical perspective without empirical study to justify the categories. Others have presented sets of structural dimensions determined a priori by the authors. Porter and Lawler (1965) considered structural properties from a total organization perspective and from a suborganizational perspective. Size and shape (tall or flat, centralized or decentralized) were the total organization dimensions and organizational level, line and staff hierarchies, span of control and size of subunit were the suborganizational dimensions discussed. Hall, Haas and Johnson (1967) considered complexity, formalization, activities and size to be the critical dimensions. The problem with these structural properties lies in the way they were identified: Their existence was not tested empirically and it was not determined whether these were the best categories to use, or if the dimensions adequately encompassed the concept of structure.

Another approach has been to factor analyze a group of variables considered important and identify factors which appear to be primarily structural in nature. Dunteman (1966) used this procedure and identified several dimensions, some of which were clearly related to structure but none which were structural in nature. Prien and Ronan (1971) factor analyzed input and output variables and found factors which seemed to be dimensions of struc-

ture: size, formalization, centralization of authority, and standardization. Although this approach is an improvement over earlier efforts, it has been criticized because it appears to take a collection of variables that have not been related theoretically, combine them, and develop factors which are then given theoretical significance (James & Jones 1976).

In what is probably the most important study of the dimensions of structure, Pugh, Hickson, Hinings, and Turner (1968) took an approach that falls between the above extremes. Starting from a conceptual base (Evan 1963, Hage 1965, Pugh et. al. 1963) these authors proposed six primary dimensions of structure: specialization, standardization, formalization, centralization, configuration, and traditionalism. After extensive development sixteen scales were selected. These were subjected to principal component analysis using data from 52 organizations. Four components of structure were identified:

- (a) structuring of activities which included specialization, standardization, and formalization
- (b) concentration of authority which included centralization
- (c) line control of workflow which included elements of the configuration dimension, and
- (d) size of the supportive component which included elements of the configuration dimension that related to the staff and administrative components.

Traditionalism did not enter into these new components of structure. Structuring of activities and concentration of authority were the strongest components of structure. Other studies have used these primary dimensions components of structure in studies of other organizations in several countries and found them useful. This supports the validity of the dimensions (Inkson

et. al., 1970a, Inkson et. al. 1970b, Pugh et. al., 1969). Although further validation is desirable, these dimensions are among the best available. Their widespread acceptance supports their use as the dimensions selected for this study.

Selection of dimensions for this study was influenced by validated dimensions and consideration for the nature of mass transportation. Consequently, no one set of structural dimensions was appropriate. Rather, the following dimensions of structure were selected from the literature: organizational size, subunit size, span of control, number of specialties, vertical span, administrative/clerical intensity, formalization, centralization, standardization and coordination. These are closely related to the dimensions identified by Pugh et. al. (1969). Formalization, number of specialties, and standardization have been utilized by Pugh (1968). Span of control, vertical span, and administrative/clerical intensity are part of the Pugh dimension of configuration. Moreover, centralization is used and coordination captured in the larger dimension "concentration of authority". Although organizational size and subunit size have not been used by Pugh, these variables are often investigated by others (Porter & Lawler 1965, Hall, Haas, & Johnson 1967, Blau & Schoenherr 1971). Size is a dimension which, for purposes of this study, will be considered a structural variable.

Table I provides a more complete review of the dimensions of structure identified in the literature and an examination of the relationships among these dimensions. The dimensions proposed for use in this study are representative of those used by organizational theorists. Therefore, the results

from the field studies of public transit organizations can be interpreted with reference to organization theory and may contribute to the improvement of the theoretical constructs.

DIMENSIONS OF STRUCTURE

| 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 Participation |
| James & Jones 1976 | Size | Configuration | | | Specialization | Formalization/Standardization | Centralization |

ORGANIZATIONAL STRUCTURE

Organizational structure can be represented by several dimensions, many of which have been discussed in preceding sections. For purposes of this study, the following structural dimensions have been selected as variables: organizational size, subunit size, span of control, number of specialties, vertical span, and administrative/clerical intensity. Formalization, centralization, standardization, and coordination will also be investigated. Each of these dimensions will be defined and reviewed in the section which follows. The review and discussion of these dimensions are presented in three sections:

- 1) Structural dimensions and their relationships to each other.
- 2) The relationships between structural dimensions and the attitudes of organizational members.
- 3) The relationships between structural dimensions and performance.

In the relationships between dimensions of structure, there are some associations which may be stated with confidence, but there are others whose relationships are not known. The paucity of evidence and contradictory results seldom allow definitive statements to be made about either the nature or the direction of association. The following subsections summarize conclusions from the pertinent literature.

ORGANIZATIONAL SIZE/SUBUNIT SIZE

The organizational literature generally defines organizational size as the number of personnel employed by the organization. This approach may be misleading. For instance, an organization could be quite large in production

or sales relative to other companies. However, due to mechanized operations, they may not employ as many people.

Counting the number of personnel in the transit industry may be especially misleading. Some transit properties operate as departments of municipalities. Here the property may utilize the city's personnel and purchasing facilities, among others. Clearly, the use of employees in this case as an indicator of size is misleading. The number of employees will be understated in comparison to a property which maintains their own personnel and purchasing departments. It is difficult, if not impossible, to determine which people are or what percent of their time is allocated to maintenance of the transit property. The number of buses operated by a property is a more frequently used measure of size.

Moreover, the impact of the subunit size should be recognized. An employee may be one of several thousand who are employed by an organization. However, it is unlikely that employees perceive their relationships at this level. More likely, the employee interacts with a department, or a subunit. Although an organization may be relatively large (employing thousands of people) the subunit size of interest may be quite small. For example, there may be a rather specialized subunit in a large organization which employs only three or four persons. The labor relations groups would be an example for transit organizations (Perry 1978).

The impact on the attitudes and performance of personnel within subunits may be more important than the absolute size of the organization. Therefore, the number of personnel, buses operated and subunit size will be utilized as size indicators for transit properties in the following sections which examine the relationships reported between the size of an organization and/or subunit and other dimensions of structure.

ORGANIZATIONAL SIZE--SPAN OF CONTROL

Organizational size has been investigated in relation to several structural dimensions. Span of control, for instance, is defined as the number of subordinates directly reporting to a superior. If a relatively large number of people report to a supervisor, the span of control is referred to as "wide". Conversely, if relatively few persons report directly to a supervisor, the span of control is referred to as "narrow". In Figure I "A" has a span of control of three persons. This is a relatively "narrow" span. "D", on the other hand, has twelve persons reporting to her/him; a relatively "wide" span of control.

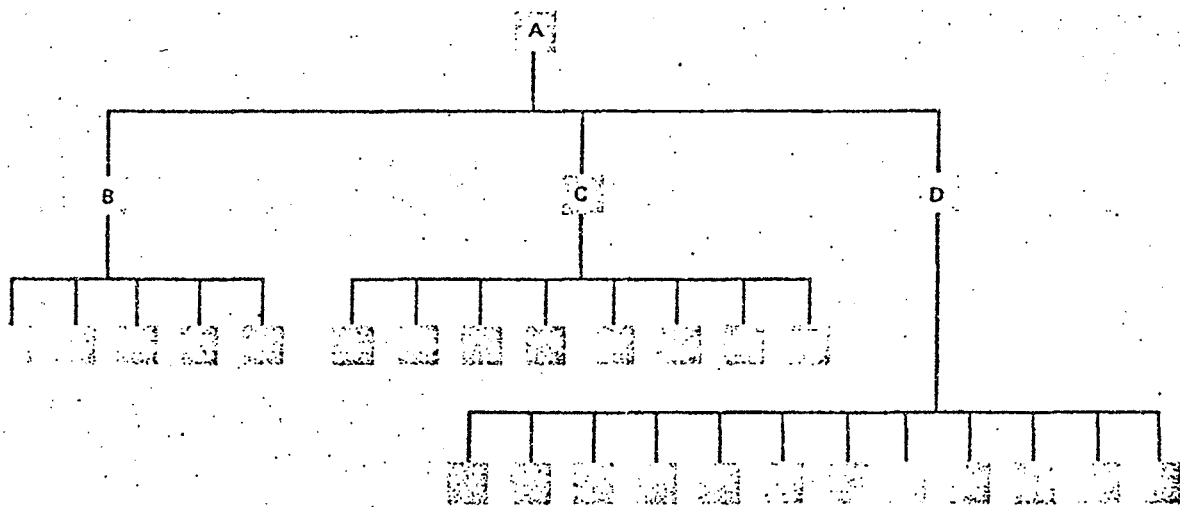


FIGURE 1

What is the effect of organization size and span of control? If two transit properties are of different size, would you expect the number of mechanics reporting to a maintenance foreman to vary? The literature suggests a variance. The relationship between organizational size and span of control has been found to be positive. In other words, as the size of the organization increases, there is a tendency for the span of control to become "wider". With respect to the previous example, maintenance foremen in large transit properties may have more mechanics reporting to them than maintenance foremen in a small property. However, care should be taken with this conclusion. There is little empirical work in this area and one study has reported the opposite relationship (Table 2).

ORGANIZATION SIZE--ADMINISTRATIVE/CLERICAL INTENSITY

Administrative/clerical intensity refers to the ratio between the total number of personnel in the organization and the administrative or clerical component. Suppose that an organization has one hundred employees. Assume that 80 of these employees are nonadministrative and 20 are administrative. The administrative ratio would be $20/80$ or $1/4$. The clerical intensity can be similarly ascertained.

Here again, some transit properties are dissimilar to private organizations and to other transit properties. Many operate as departments of municipalities or counties. If a transit property receives administrative or clerical support from city or county agencies which other properties must provide themselves, administrative/clerical ratios will be inaccurate and misleading.

In any case, the available evidence does not permit an unambiguous statement concerning this relationship. Inverse, zero and positive associations have been reported for both clerical and administrative dimensions (Table 2).

ORGANIZATIONAL SIZE--VERTICAL SPAN

Vertical span may be defined as the "height" of the organization, or the number of organizational levels, i.e., the hierarchical levels of the organization. In Figure 2 both organizations have thirty-one employees. However, the "flat" organization chart has three hierarchical levels. The "tall" chart has five such levels. This illustrates the principle of the vertical span. "Flat" refers to an organization with relatively few hierarchical levels. "Tall" refers to that organization which is characterized with relatively more levels.

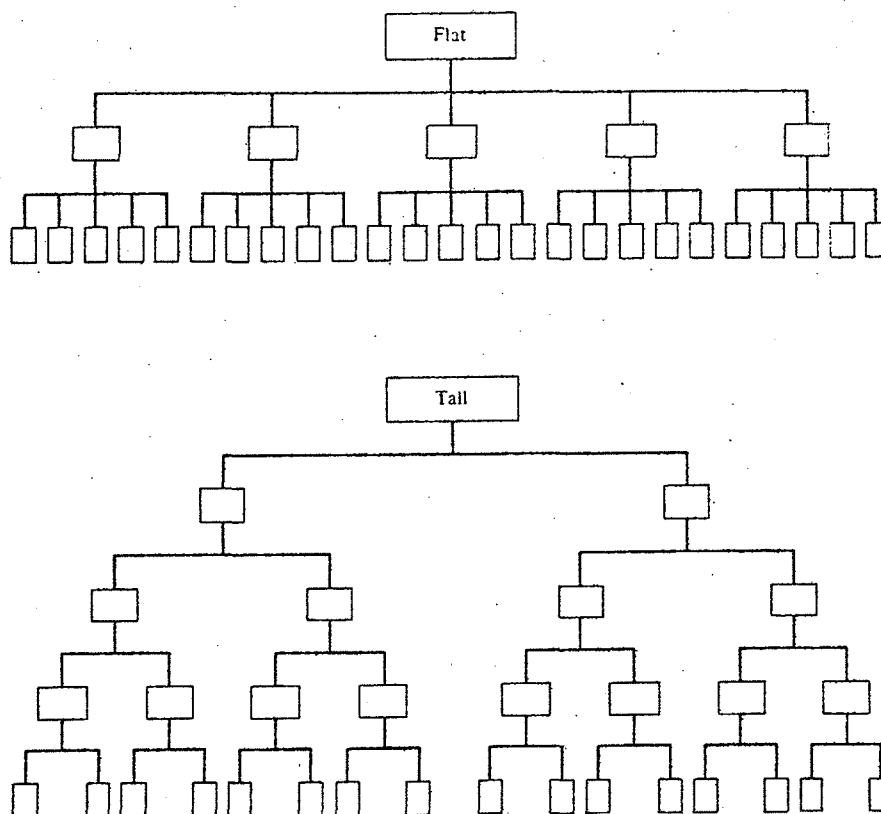


FIGURE 2

The research in the area of organizational size and vertical span is not surprising. There seems to be a positive relationship. As the size of the organization increases there is a concomitant increase in the number of hierarchical levels.

This tendency is commonly seen in the transit industry. Smaller properties are often characterized by "flat" structure. There may be no assistant manager, or perhaps the assistant manager has the direct responsibility for the operations unit. That larger properties may have more levels of hierarchy appears to be consistent in the transit industry.

ORGANIZATIONAL SIZE--FORMALIZATION-STANDARDIZATION

A series of studies investigated the impact of organizational size on the dimensions of formalization and standardization. Formalization refers to the extent to which appropriate behavior is described in writing; the rules in the organization describing appropriate work behaviors. Standardization prescribes or limits the behavior and/or procedures of organizational members. Formalization might be a job description which would outline those activities expected of an individual in a job classification. For instance, "the assistant personnel manager will be responsible for the testing of prospective employees". Notice that, although this statement is in writing and describes a certain behavior expected of persons in this job classification, it does not in any way limit or prescribe the procedures by which the assistant manager could fulfill the responsibility. Standardization would specifically outline those procedures by which the "testing of prospective employees" would (or must) be accomplished. Formalization refers to

what you are asked to do. Standardization refers to how you are to do it. The existence of safety and procedure manuals for bus operators would be an example of formalization/standardization.

Is there a relationship between the existence of written rules and procedures for transit employees and the size of the property? In other organizations this relationship is consistently reported as positive (Table 2). As the size of the organization increases, employees are told more often both what they are to do and how they are to do it.

ORGANIZATION SIZE--NUMBER OF SPECIALTIES

The number of specialties in an organization has also been found to relate positively with organizational size (Table 2). By definition it is the number of occupational titles or distinct functional activities pursued in the organization. Reported relationships suggest that as the size of organizations increase, there is a corresponding increase in the number of functions and occupational titles. This tendency may be seen throughout transit structure. It seems reasonable that as the size of transit properties expand, new titles would be a consequence. In a smaller property, the personnel manager may be expected to design and implement an affirmative action policy. However, in a large property, or as a property expands in size, an affirmative action officer may be created.

ORGANIZATION SIZE--CENTRALIZATION

Centralization is related with locus of authority to make decisions in the organization. For example, if the power to make decisions is exercised

TABLE 2

| Structural Dimension | Investigation | Relationship | Trend |
|---|--|--|---|
| ORGANIZATIONAL SIZE/ SUBUNIT SIZE & SPAN OF CONTROL | Pondy 1969 | Negative | Evidence is contradictory. Difficult to assess this relationship with available research. |
| | Blau 1970 | Positive | |
| | Holdaway & Bowers 1971 | Positive | |
| | Lawler, Hall, Oldham 1974 | Positive | |
| ORGANIZATIONAL SIZE/ SUBUNIT SIZE & VERTICAL SPAN | Hall, Haas, & Johnson 1967 | Positive | Available evidence indicates that the relationship between vertical span and organizational size/subunit size is positive. |
| | Pugh, Hickson, Hinings & Turner 1968 | Positive | |
| | Hinings & Lee 1971 | Positive | |
| | Child 1972 | Positive | |
| | Meyer 1972 | Positive | |
| | Payne & Mansfield 1973 | Positive | |
| ORGANIZATIONAL SIZE/ SUBUNIT SIZE & ADMINISTRATIVE/ CLERICAL INTENSITY | Lawler, Hall & Oldham 1974 | Negative | This relationship is not clear. The available evidence in the literature does not allow an unambiguous statement about the relationship between organizational size and its administrative/clerical ratios. |
| | Melman 1951 | Inverse | |
| | Baker & Davis 1954 | Zero | |
| | Bendix 1956 | Inverse | |
| | Parkinson 1957 | Positive | |
| | Anderson & Markov 1961 | Negative | |
| | Rushing 1967 | Positive thru complexity Administrative-negative Clerical-positive | |
| | Thompson 1967 | Negative | |
| | Pondy 1969 | Inverse | |
| | Blau 1970 | Positive | |
| | Hunt 1970 | Negative | |
| | Blau & Schoenherr 1971 | Administrative-negative Clerical-zero | |
| | Holdaway & Bowers 1971 | Negative-crosssectional Positive-longitudinal | |
| | Meyer 1972 | Positive | |
| | Hrebiniak & Alutto 1973 | Zero | |
| Kasarda 1974 | Administrative-negative Clerical-positive | | |
| ORGANIZATIONAL/SIZE SUBUNIT SIZE & FORMAL- IZATION/STANDARDIZA- TION | Hall, Haas, & Johnson 1967 | Positive | This relationship seems clear. As the size of the organization increases, there is a concomitant increase in formalization and standardization. |
| | Pugh, Hickson, Hinings & Turner 1968 | Positive | |
| | Hinings & Lee 1971 | Positive | |
| | Child 1972 | Positive | |
| | Payne & Mansfield 1973 | Positive | |
| | Evers ET. AL. 1976 | Positive | |
| | Neqandhi & Reimann 1977 | Positive | |
| ORGANIZATIONAL/SIZE/ SUBUNIT SIZE AND NUMBER OF SPECIALTIES | Pugh, Hickson, Hinings & Turner 1968 | Positive | As organizational size increases the number of different functional activities and/or occupational titles increases as well. |
| | Hinings & Lee 1971 | Positive | |
| | Child 1972 | Positive | |
| | Payne & Mansfield 1973 | Positive | |

by a single individual, the structure would be considered centralized. If one individual makes every single decision in the organization (an unlikely event), the ultimate in centralization has been achieved. A minimum degree of centralization (sometimes referred to as decentralization) would exist in an organization if the decision making authority were exercised equally by every member.

Relationships between organizational size and centralization have been consistently negative. As organizational size increases, there is a tendency for decision making authority to become less central. As the size of the organization increases, more and more people begin to participate in decision making (Table 3).

This seems reasonable for transit properties. With similar properties it is conceivable (though not necessary) that some transit managers would delegate little decision making authority. As a property becomes larger, this becomes an increasingly less viable strategy. At some point, decision making authority must be delegated otherwise centralized organizations become dysfunctional.

CENTRALIZATION-FORMALIZATION/STANDARDIZATION

The relationship between centralization and standardization/formalization is muddled. There are both positive and negative reports (Table 3). It is difficult to state firmly the association between dispersion of decision making authority and incidence of formalization and standardization. Whether there would be a relationship between a transit manager's delegation of decision

making authority (or lack thereof) and existence of written rules and regulations in a property can not be predicted with certainty by examining the literature.

CENTRALIZATION--NUMBER OF SPECIALTIES

Similarly, the relationship between centralization and the number of specialties is not clear. Zero association has been reported along with reports of positive (Table 3). A paucity of research makes it difficult to state with confidence the relationship which may accompany dispersion of decision making authority and the number of functions and occupational titles.

SUMMARY

There are several associations between structural dimensions which may be reported with confidence. Available evidence indicates the relationship between vertical span and the size of the organization is positive. Similarly, as the size of the organization increases, there is a concomitant increase in formalization/standardization. Functional activities and/or occupational titles tend to increase with the size of the organization. Another clear finding is the association between centralization and organizational size. As the organization increases in size, there is a dispersion of decision making authority. Although it is an empirical question, there is no reason to believe similar associations will not exist in transit properties as well.

In other areas the evidence is contradictory or a paucity of research makes it difficult to summarize results. The relationships between organizational size and span of control, administrative intensity and the associations

between centralization and formalization/standardization and the number of specialties are in this category. The data collected in this field research of sixteen transit properties should improve the predictive base for these dimensions of organizational structure.

Many fundamental questions arise about interrelationships between structural dimensions. What effect do these dimensions have on the attitudes of organizational personnel? What is the impact on performance? A review of the research which addresses these issues in non-transit organizations follows. For purposes of these review sections, the possible impact on transit properties remains tentative. Transit properties have not been subject to structural research prior to this time.

TABLE 3

| Structural Dimension | Investigation | Relationship | Trend |
|--|--------------------------------------|------------------------|---|
| ORGANIZATIONAL SIZE/ SUBUNIT SIZE & CENTRAL- IZATION | Pugh ET. AL. 1968 | Positive | This relationship also seems clear. Organization increases in size there is dispersion of decision making authority. |
| | Blau 1970 | Negative | |
| | Hinings & Lee 1971 | Negative | |
| | Child 1972 | Negative | |
| | Meyer 1972 | Negative | |
| | Negandhi & Reimann 1973 | Negative | |
| | Payne & Mansfield 1973 | Negative | |
| Evers ET. AL. 1976 | Negative | | |
| CENTRALIZATION/ & FORMALIZATION/ STANDARDIZATION | Hall 1963 | Positive | This relationship is not clear. The avail- able evidence does not allow a confident statement about the relationship between the dispersion of decision making auth- ority and formalization/standardization. |
| | Hage & Aiken 1967 | Positive | |
| | Pugh, Hickson, Hinings & Turner 1968 | Negative | |
| | Hinings & Lee 1971 | Negative | |
| | Child 1972 | Negative | |
| | Beck & Betz 1975 | Positive | |
| CENTRALIZATION & NUMBER OF SPECIALTIES | Hall 1963 | Positive | The relative paucity of research and the lack of consistency in the results leaves us with little confidence in assessing the relationship. |
| | Hage & Aiken 1967 | No Relationship (zero) | |

STRUCTURAL DIMENSIONS AND ATTITUDE

Attitude is an often studied dimension in organizations. The term attitude has been described simply as an "opinion concerning some object". Typical job attitude studies may include opinions of employees concerning the overall organization, supervision, working conditions, and other areas in which the employee works and/or interacts. For this study, the opinions of interest concern structural variables. For example, are employees "more satisfied" as members of span of control which are "wide" or "narrow"?

Interest in the attitudes of personnel regarding various components or the organization is justified because of the alleged relationship between attitude and behavior. Perhaps situations under which employees have positive attitudes are conducive to higher levels of performance. For example, if employees prefer "narrow" spans of control, they may perform better in a "narrow" span than a "wide" one.

A review of organizational structure and attitudes reveals a variety of relationships. Some associations are reasonably well established, some ambiguous and others unknown. The following subsections examine and summarize various structural dimensions and attitudes.

ORGANIZATIONAL LEVEL--JOB SATISFACTION

An impressive body of literature addresses this relationship (Table 4). It has been found that individuals with higher job levels in the organization typically report higher levels of job satisfaction. A fourth level manager is likely to report higher levels of job satisfaction than a first level manager. Although the majority of studies indicate this relationship,

several others suggest otherwise (Table 4). Recent studies complicate the understanding between an individual's organizational level and job satisfaction. There are no less than six studies which have reported no association between level in organization and satisfaction. The preponderance of evidence indicates a positive relationship. However, caution should be exercised in generalizing this association.

SIZE OF THE ORGANIZATION/SUBUNIT SIZE--JOB SATISFACTION

Early investigations indicate a negative relationship (Table 5) between size of the organization and job satisfaction. Members of large organizations have a tendency to report lower levels of job satisfaction. However, more recent evidence (Table 5) questions this relationship. A prediction could not be made concerning size of a transit property and satisfaction of its employees based on experience in non-transit organizations.

SIZE OF THE ORGANIZATION/SUBUNIT SIZE--ABSENTEEISM*

Absenteeism, or the propensity to be absent indicates an attitude towards an organization. In addition, absenteeism may impact organizational performance. In the transit industry absenteeism of bus operators has a critical effect on the performance of transit operations because extra drivers must be employed to ensure that schedules are maintained.

There is substantial evidence (Table 5) that absenteeism is related to organizational size and/or the size of the subunit. Absenteeism is likely to be higher in large organizations or organizations with large subunits.

*This topic along with absenteeism will be discussed in the section on structural dimensions and performance.

TABLE 4

| Structural Dimension | Investigation | Relationship | Trend |
|--|--|--------------|---|
| ORGANIZATIONAL LEVEL & JOB SATISFACTION | Kolstad 1944 | Positive | Although there is some evidence to the contrary, it can be said that there is a tendency that higher levels of job satisfaction are associated with higher managerial levels. |
| | Campbell 1948 | Positive | |
| | Brown & Neitzel 1952 | Positive | |
| | Morse 1953 | Positive | |
| | Ash 1954 | Positive | |
| | Herzberg, Mausner, Peterson & Capwell 1957 | Positive | |
| | Handyside 1961 | Positive | |
| | Porter 1961 | Positive | |
| | Rosen 1961 | Positive | |
| | Opinion Research Corp. 1962 | Positive | |
| | Porter 1962 | Positive | |
| | Haire, Ghiselli & Porter 1963 | Positive | |
| | Porter 1964 | Positive | |
| | Rimm & Mannheim 1964 | Positive | |
| | Larson & Owens 1965 | Negative | |
| | Jerdee 1966 | Negative | |
| | Lawler & Porter 1966 | Negative | |
| | Miller 1966 | Positive | |
| | Porter & Mitchell 1967 | Positive | |
| | El Salmi & Cummings 1968 | Interactive | |
| | Johnson & Marcum 1968 | Positive | |
| | Graham 1969 | Negative | |
| | Rinehart ET. AL. 1969 | Positive | |
| | Cummings & El Salmi 1970 | Zero | |
| | Lichtman 1970 | Positive | |
| | Mitchell 1970 | Zero | |
| | Slocum 1971 | Positive | |
| | Herman & Hulin 1972 | Positive | |
| | Herman & Hulin 1973 | Zero | |
| | Waters & Roach 1973 | Positive | |
| | Lock & Whiting 1974 | Positive | |
| | Schwab & Wallace 1974 | Negative | |
| | Herman, Dunham & Hulin 1975 | Positive | |
| Newman 1975 | Positive | | |
| O'Reilly & Roberts 1975 | Positive | | |
| Schuler 1975 | Curvilinear | | |
| Pain, Carroll & Leet 1976 | Positive | | |

ORGANIZATIONAL SIZE/SUBUNIT SIZE--TURNOVER

The tendency for a person to leave the organization may reflect an attitude in the individual which could be related to structural variables. The earlier studies of organizational size/subunit size and turnover suggests a positive relationship, but recent evidence indicates that there is no relationship between organizational size and turnover (Table 5). In other words, it may be difficult to predict greater or lesser turnover by examining the size of a transit property. This is an empirical question which remains to be tested with data from the field studies. However, there is contradictory evidence from non-transit research.

VERTICAL SPAN--JOB SATISFACTION

Vertical span refers to the number of hierarchical levels in the organization. In a previous section, the "flat" and "tall" dimensions of vertical span were discussed. There is confusion in the literature (see Table 6) with respect to relationships between vertical span and job satisfaction. Early investigations offered mixed results. Both tall and flat structure have been reported as being associated with higher levels of satisfaction. A recent study may shed some light on this area of disagreement (El Salmi & Cummings 1970). People who have relatively high job levels within the organization express greater job satisfaction if the organization is characterized by a tall structure (relatively large number of organizational levels). Conversely, individuals who have relatively low hierarchical levels in the

TABLE 5

| Structural Dimension | Investigation | Relationship | Trend |
|---|------------------------------------|--------------|---|
| SIZE OF THE ORGANIZATION/ SUBUNIT SIZE & JOB SATIS- FACTION | Worthy 1950 | Negative | This relationship is not clear. Recent evidence from the literature is mixed. |
| | Kerr, Koppelmeier & Sullivan 1951 | Negative | |
| | Talacchi 1960 | Negative | |
| | Indik & Seashore 1961 | Negative | |
| | Indik & Seashore 1961 | Zero | |
| | Katzell, Barrett & Parker 1961 | Negative | |
| | Campbell 1962 | Negative | |
| | Thomas & Fink 1969 | Negative | |
| | Cummings & El Salmi 1970 | Zero | |
| | Harrell 1971 | Positive | |
| | Payne & Pheysey 1971 | Negative | |
| | Bass & Barrett 1972 | Negative | |
| | Mahoney ET. AL. 1972 | Positive | |
| | Osborne & Hunt 1975 | Positive | |
| | Biggers 1976 | Positive | |
| Cummings & King (Cummings & Berger 1976) | Zero | | |
| SIZE OF THE ORGANIZATION SUBUNIT SIZE & ABSENTEEISM | Kerr, Koppelmeier & Sullivan 1951 | Positive | There seems to be evidence in the literature which would allow a reasonable assertion that absenteeism is likely to be associated with larger subunits. However, notice that recent evidence is not supportive of this position |
| | Acton Society Trust 1953 | Positive | |
| | Hewitt & Parfitt 1953 | Positive | |
| | Metzner & Mann 1953 (White collar) | Zero | |
| | Metzner & Mann 1953 (Blue collar) | Positive | |
| | Argyle, Gardner & Cioffi 1958 | Curvilinear | |
| | Revans 1958 | Positive | |
| | Revans 1958 | Positive | |
| | Revans 1958 | Positive | |
| | Baumgartel & Sobol 1959 | Positive | |
| | Indik & Seashore 1961 | Positive | |
| Ingham 1970 | Zero | | |
| SIZE OF ORGANIZATION SUBUNIT SIZE & TURNOVER | Kerr, Koppelmeier & Sullivan 1951 | Positive | Recent evidence seems to suggest that there is no relationship between organization size and/or subunit size and turnover. |
| | Mandell 1956 | Positive | |
| | Argyle, Gardner & Cioffi 1958 | Zero | |
| | Indik & Seashore 1961 | Positive | |
| | Ingham 1970 | Zero | |
| | Payne & Pheysey 1971 | Zero | |
| Reimann 1975 | Zero | | |

organization report greater satisfaction when the organization is characterized by a flat structure (relatively few organizational levels). These reports are intuitively appealing. When an individual has a very high position in an organization with many levels below him/her, it is not surprising to find a high level of job satisfaction. Similarly, if an individual has a relatively low hierarchical position, but with only very few levels above him/her, it is no surprise that this individual expresses a relatively high job satisfaction. They may well perceive themselves as near the top. These tendencies may at least partially explain the difference in research findings in this area. Since transit properties vary in their vertical span, it will be most interesting to examine the reported levels of satisfaction among upper and lower managerial echelons.

SPAN OF CONTROL--JOB SATISFACTION

It has been stated that large spans of control lead to high morale (Table 6). However, the lack of empirical data in the investigation makes it difficult to evaluate this position. Limited research coupled with a lack of reported data leads to the conclusion that the relationship, if any, between span of control and attitude is unknown.

CENTRALIZATION/JOB SATISFACTION

There is relatively little research in this area. The available evidence (Table 7) indicates there is no association between the dispersion of decision making authority and job satisfaction. Based on the small number of investigations, it is difficult to generalize the results. The relationship between centralization and job satisfaction is not clear.

TABLE 6

| Structural Dimension | Investigation | Relationship | Trend |
|---------------------------------------|----------------------------|---|---|
| VERTICAL SPAN & JOB SATISFACTION | Graicunas 1937 | Tall (satisfaction) | |
| | Richardson & Walker 1948 | Flat (satisfaction) | |
| | Worthy 1950 | Flat (satisfaction) | |
| | Meltzer & Salter 1962 | No Difference | (some evidence for difference in degree of need satisfaction) |
| | Porter & Lawler 1964 | No Clear Finding | (some evidence of difference in degree of need satisfaction in relation to the number of employees in the organization) |
| | Porter & Siegel 1964 | No Clear Finding | |
| | Jones 1969 | Curvilinear | |
| SPAN OF CONTROL & JOB SATISFACTION | El Salmi & Cummings 1970 | In low hierarchical levels flat structure was associated with satisfaction. | |
| | | In higher hierarchical levels, tall structure was associated with satisfaction. | |
| | Ghiselli & Johnson 1970 | In Higher hierarchical levels, tall structure was associated with satisfaction. | This relationship is not clear. The evidence suggest a non-linear relationship, moderated by both the level of the respondent and the vertical span of the organization studied. |
| | Ivancevich & Donnelly 1975 | Flat (satisfaction) | |
| | Richardson & Walker 1948 | Positive | The limited research in this area, coupled with the lack of empirical data leads to the conclusion that the relationship between span of control and job satisfaction is not known. |
| | Worthy 1950 | Positive (stated that large spans of control leads to high morale) | |

FORMALIZATION/STANDARDIZATION--JOB SATISFACTION

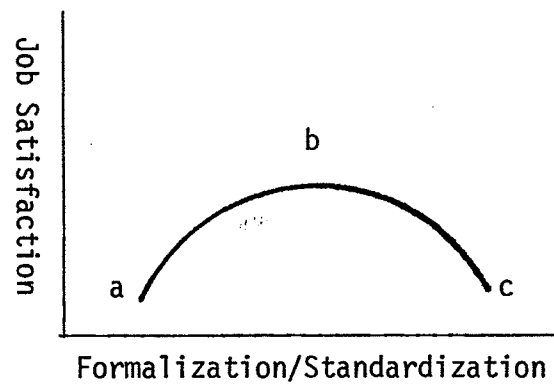
There is a large body of research which has investigated the impact of formalization/standardization on attitudes in the organization. These studies group nicely into two categories. There are those which report (Table 7) as formalization/standardization increases there is a concomitant rise in job satisfaction for members of the organization. Simply stated, employees may be more satisfied when they know what they are to do and how they are to do it. If persons have no knowledge of what is expected of them, dissatisfaction may arise. Therefore, it has been argued that in formalized and standardized organizations there is high reported job satisfaction among the employees.

There is a second, disparate view. Several researchers (Table 7) have commented on the negative aspects of formalization/standardization. The rationale for this position is simply stated. Formalization/standardization are closely linked to division of labor. The resulting job simplification leads to boredom, alienation, and low job satisfaction. This, in turn, may result in absenteeism, turnover, and lower performance.

These contradictory positions suggest the association between job satisfaction and formalization/standardization is not linear. Rather, the relationship may be parabolic. Perhaps there is an optimal range of formalization/standardization which reduces role conflict and ambiguity yet maintains acceptable levels of job scope. In Figure 3 formalization/standardization increases with movement from point "a".

TABLE 7

| Structural Dimension | Investigation | Relationship | Trend |
|--|-------------------------------------|---|---|
| CENTRALIZATION/ JOB SATISFACTION | Baker & France 1954 | No Difference | The available evidence does not support a relationship between centralization/ decentralization and job satisfaction. |
| | Litzinger 1963 | No Difference | |
| | Child 1973 | Negative | |
| | Levine 1973 | Negative | |
| FORMALIZATION/STANDARDIZATION & JOB SATISFACTION | Gross 1958 | Positive | These studies support the notion of positive consequences of formalization and standardization. Basically, an increase in these dimensions is believed to reduce role ambiguity and role conflict in the members of the organization. |
| | Kahn ET. AL. 1964 | Positive | |
| | Hickson 1966 | Positive | |
| | Graen 1969 | Positive | |
| | Maher & Piersol 1970 | Positive | |
| | Rizzo, House & Lirtzman 1970 | Positive | |
| | Tosi 1971 | Positive | |
| | Tosi & Tosi 1971 | Positive | |
| | House & Rizzo 1972 | Positive | |
| | Pheysey, Payne & Pugh 1972 | Positive | |
| | Dachler & Mobley 1973 | Positive | |
| | Jorgensen, Dunnette & Prichard 1973 | Positive | |
| | Evans 1974 | Positive | |
| | Miner, Rizzo, Harlow & Hall 1974 | Positive | |
| | Baum & Youngblood 1975 | Positive | |
| | Argyris 1954 | Negative | These commentaries and investigations suggest a negative relationship between formalization/standardization and employee satisfaction. The rationale for this position is clearly stated. Formalization/standardization leads to division of labor which may lead to boredom and therefore to low job satisfaction. |
| | Whyte 1955 | Negative | |
| | Argyris 1957 | Negative | |
| | March & Simon 1958 | Negative | |
| | Herzberg, Mausner & Snyderman 1959 | Negative | |
| | MacGregor 1960 | Negative | |
| | Likert 1961 | Negative | |
| | White 1961 | Negative | |
| | Forehand & Gilmer 1964 | Negative | |
| | Kahn 1964 | Negative | |
| | Kornhauser 1965 | Negative | |
| | Turner & Lawrence 1965 | Negative | |
| Herzberg 1966 | Negative | These contradictory positions suggest that the relationship is not linear. There may well be an optimal range of formalization/standardization which reduces role conflict and ambiguity yet maintains acceptable levels of job scope. The analysis strongly suggests a parabolic relationship. | |
| Hulin & Blood 1968 | Negative | | |
| Corwin 1969 | Negative | | |
| Walton & Dutton 1969 | Negative | | |
| Hackman & Lawler 1971 | Negative | | |
| Pheysey ET. AL. 1971 | Negative | | |
| Child 1973 | Negative | | |



(Figure 3)

Job satisfaction increases from point "a" to point "b". This "a-b" distance can be thought of as those increases in formalization/standardization which reduce conflict and ambiguity for the employee. This might increase job satisfaction.

The distance from point "b" to point "c" indicates that as formalization/standardization continues to increase, job satisfaction decreases. Perhaps along this distance the dysfunctional impact of formalization/standardization occurs. Beyond point "b" the job itself may become too simplified leading to boredom, alienation, and lower levels of job satisfaction. Whether or not the impact on job satisfaction is positive or negative depends on the degree of formalization/standardization.

SUMMARY

With respect to structural dimensions and their impact on attitude, there are several rather clear associations. There appears to be a relationship between the organizational level of employees and their job satisfaction; persons in relatively higher levels of hierarchy report higher job satisfaction.

The literature on turnover and absenteeism provides indications of the attitudes which might be found in transit organizations. There is no rela-

tionship between size of organizations and incidence of turnover. Large organizations and small organizations do not differ substantially in their rates of turnover. However, there is strong evidence supporting a positive association between size of organizations and absenteeism. Larger organizations appear to have higher rates of absenteeism in their personnel.

Several other relationships are not as clear. Paucity of research on span of control and attitude makes summarization hazardous. Conflicting evidence in the area of organizational size and employee satisfaction also limits conclusions. There is a definite need for additional research in these areas.

There is also conflicting evidence concerning associations between vertical span, formalization/standardization and satisfaction. However, the conflicts can be partially resolved by the non-linear nature of the relationship. There may be optimal ranges for both vertical span and formalization/standardization. The curvilinear relationship explains satisfaction at the midpoint and dissatisfaction with the extremes of the formalization/standardization dimension.

Attitude may also be related to performance. Perhaps as satisfaction increases, there is a corresponding increase in performance. The next section addresses the issue of performance and structural dimensions. As improved performance is required in the transit industry, knowledge of the structural dimensions which impact performance is critical. Because little is known about the effect of structural dimensions on the performance of transit organizations, the following review does not address the transit industry directly.

Rather, the focus is upon extensions which may be made with reasonable authority from the non-transit literature.

STRUCTURAL DIMENSIONS AND PERFORMANCE

The primary question of this research is whether variations in the structural components of transit organizations result in differential performance. Structural dimensions and individual attitudes were discussed in previous sections and their relationships, if any, with performance will now be reviewed and summarized. Do large transit properties perform differently than smaller properties? What are the associations between organizational size and control, institutional management, and innovation? Do variations in span of control and vertical span impact organizational performance? These and other questions and concepts which address the relationship between structural dimensions and performance are discussed in this section. There is some duplication of evidence from previous sections as the same structural dimensions are considered.

SIZE OF THE ORGANIZATION/SUBUNIT SIZE AND PERFORMANCE

This relationship is not clear. The literature presents an array of conclusions which defy generalization. There are reports of negative, positive, curvilinear, and zero relationships (Table 8). Based on the results of research, the relationship between size of the organization and subunit size and measures of performance is not known. With the development of comparative performance measures for use in the transit industry (Fielding, Glauthier & Lave 1977) and the variance in transit properties to be investigated in this study, some light may be shed on this relationship. This study provides a unique opportunity to examine structural dimensions by comparing efficiency and effectiveness measures across transit properties of various sizes.

TABLE 8

| Structural Dimension | Investigation | Relationship | Trend |
|---|--|--------------|--|
| SIZE OF THE ORGANIZATION/ SUBUNIT SIZE & PERFORM- ANCE | Marriott 1949 | Negative | This relationship is not clear. The evidence of a relationship between performance and organizational size subunit size is conflicting. |
| | Herbst 1957 | Curvilinear | |
| | Argyle, Gardner & Coffi 1958 | Positive | |
| | Revans 1958 | Curvilinear | |
| | Revans 1958 | Negative | |
| | Thomas 1959 | Positive | |
| | Indik & Seashore 1961 (delivery services) | Negative | |
| | Indik & Seashore 1961 (auto dealerships) | Zero | |
| | Katzell, Barrett & Parker 1961 | Negative | |
| | Hewitt & Parfit 1963 | Negative | |
| | Corwin 1970 | Positive | |
| | Hrebiniak & Alutto 1970 | Negative | |
| | Mahoney, Frost, Crandall, & Weitzel 1972 | Zero | |
| | Fiedler & Gillo 1974 | Negative | |
| | Reimann 1975 | Zero | |
| These studies have investigated the association between size or the organization and the incidence of the strike. | Cleland 1955 | Negative | Again, this relationship is not clear. The evidence does not allow an unambiguous statement about the association between the size of the organization and the incidence of strikes. |
| | Revans 1958 | Negative | |
| | Olson 1971 | Positive | |
| | Shorter & Tilly 1971 | Positive | |
| | Britt & Galle 1974 | Positive | |
| | Eisele 1974 | Positive | |

SIZE OF THE ORGANIZATION/SUBUNIT SIZE AND ABSENTEEISM

Excessive levels of absenteeism in the organization may be dysfunctional. High levels of absenteeism probably impact organizational performance. This is true in the transit industry where bus operator absenteeism and late-outs are detrimental to operations. Despite some conflicting evidence, there appears to be a positive relationship between organizational size and absenteeism. There does appear to be a greater incidence of absenteeism in larger organizations (Table 9).

SIZE OF THE ORGANIZATION/SUBUNIT SIZE AND TURNOVER

Here again, excessive levels of turnover in the organization are dysfunctional to operations. However, available evidence does not indicate a relationship between organizational size and turnover (Table 9). There is no substantive difference in the turnover rate in large versus smaller organizations.

ORGANIZATIONAL SIZE--ORGANIZATIONAL CONTROL

Recent investigations (Table 10) have reported a positive relationship between the size of the organization and the extent of organizational control. Varying amounts of organizational control may impact the performance of the organization. It has been suggested that larger organizations may utilize more stringent control procedures.

ORGANIZATIONAL SIZE--INSTITUTIONAL MANAGEMENT

Interesting studies (Table 10) have indicated a positive correlation between the size of the organization and "boundary spanning activity".

TABLE 9

| Structural Dimensions | Investigation | Relationship | Trend |
|---|------------------------------------|--------------|--|
| SIZE OF THE ORGANIZATION/SUBUNIT SIZE & ABSENTEEISM | Kerr, Koppelmeier & Sullivan 1951 | Positive | Although there are conflicting reports there appears to be some evidence that larger organizations and subunits are characterized by having higher rates of absenteeism. |
| | Acton Society Trust 1953 | Positive | |
| | Hewitt & Mann 1953 | Positive | |
| | Metzner & Mann 1953 | Positive | |
| | Metzner & Mann 1953 (white collar) | Zero | |
| | Argyle, Gardner & Cioffi 1958 | Curvilinear | |
| | Revans 1958 | Positive | |
| | Revans 1958 | Positive | |
| | Revans 1958 | Positive | |
| | Baumgartel & Sobol 1959 | Positive | |
| | Indik & Seashore 1961 | Positive | |
| Ingham 1970 | Zero | | |
| SIZE OF THE ORGANIZATION/SUBUNIT SIZE & TURNOVER | Kerr, Koppelmeier & Sullivan 1951 | Positive | Recent evidence implies that there is no relationship between the size of the organization and/or subunit and turnover. |
| | Mandell 1956 | Positive | |
| | Argyle, Gardner & Cioffi 1958 | Zero | |
| | Indik & Seashore 1961 | Positive | |
| | Ingham 1970 | Zero | |
| | Payne & Pheysey 1971 | Zero | |
| | Reimann 1975 | Zero | |

Boundary spanning activity refers to a practice of influencing or attempting to influence individuals, groups, or agencies outside normal confines of the organization. For instance, a large corporation may place a bank officer on its board of directors to influence future financial affairs of interest to the corporation. It has been suggested (Pfeffer 1976, Aldrich & Pfeffer 1976) that "institutional management" is critical to the success of the enterprise.

It may be especially critical in the transit industry. The relationships which transit properties enjoy (or otherwise) with their boards, citizen groups, counties, municipalities, state and federal agencies are of utmost importance to their operations. It may be that larger properties interact with, and are viewed differently by, the external groups and agencies with which they interact.

ORGANIZATIONAL SIZE--INNOVATION

Two recent studies (Table 10) have concluded that organizational size is positively related to innovation in the organization. As the incidence of innovation is more likely as organizational size increases, innovation may be essential to the performance of the expanding organization.

Innovation may be a key diagnostic variable for transit operations. The demand for transit service is changing and the manner in which transit organizations innovate and react to new demand may affect their performance. There may also be a difference in the way transit properties of varying sizes will or can innovate and/or react to demand.

TABLE 10

| Structural Dimension | Investigation | Relationship | Trend |
|--|--|----------------------------------|--|
| SIZE OF THE ORGANIZATION/SUBUNIT SIZE & ORGANIZATIONAL CONTROL | Reeves & Woodward 1970 Ouchi & McGuire 1975 Ouchi 1977 | Positive Positive Positive | Organizational control may impact organizational performance. |
| SIZE OF THE ORGANIZATION/SUBUNIT SIZE & INSTITUTIONAL MANAGEMENT | Hrebiniak & Alutto 1973 Aldrich & Pfeffer 1976 Leifer & Huber 1977 | Positive Positive Positive | Evidence indicates a positive association between the size of the organization and institutional management. Institutional management may be critical to organizational performance. |
| SIZE OF THE ORGANIZATION/SUBUNIT SIZE & INNOVATION | Baldrige & Burham 1975 Moch 1976 | Positive Positive | Innovation may impact organizational performance. |

SPAN OF CONTROL--PERFORMANCE

The relationship between the number of persons directly reporting to a supervisor and performance is unclear. There is some evidence to support a positive association between span of control and performance (Table 11). However, several of the studies which report this association were not based on empirical data. It is, therefore, difficult to assess their conclusions. Discounting the non-empirical investigations leaves conflicting evidence. The relationship between span of control and performance is not clear at this time.

VERTICAL SPAN--PERFORMANCE

This relationship cannot be stated with confidence. The studies which have investigated this association are conflicting. Negative, positive, and zero relationships have been reported (Table 11). The association between the number of hierarchical levels in the organization and performance is not clear from the research results.

ADMINISTRATIVE/CLERICAL INTENSITY--PERFORMANCE

The evidence concerning administrative/clerical intensity and performance is conflicting (Table 11). In addition, recent work by Dogramici (1977) has undermined confidence in the earlier research. The previous research has been challenged because the statistical procedures utilized may not have been appropriate. Therefore, this association cannot be stated with authority.

In transit there may be an additional problem. As has been mentioned previously, some transit operations do not operate independently. They are

TABLE 11

| Structural Dimension | Investigation | Relationship | Trend |
|--|----------------------------|--------------|--|
| SPAN OF CONTROL & PERFORMANCE | Worthy 1950 | Positive | Difficult to assess, no empirical support |
| | Woodward 1965 | Curvilinear | Difficult to assess, no empirical support |
| | Ghiselli 1969 | Positive | There is evidence to support a positive association between span of control and performance. |
| | Farris 1969 | Positive | |
| Ghiselli & Johnson 1970 | Positive | | |
| VERTICAL SPAN & PERFORMANCE | Meltzer & Saltzer 1962 | Positive | Findings are conflicting. This relationship cannot be stated with confidence. |
| | Carzo & Yanousas 1969 | Positive | |
| | Ghiselli & Johnson 1970 | Negative | |
| | Ivancevich & Donnelly 1975 | Zero | |
| ADMINISTRATIVE/INTENSITY & PERFORMANCE | Melman 1951 | Negative | Findings are conflicting. This relationship cannot be stated with confidence. |
| | Melman 1956 | Negative | |
| | Holland 1963 | Positive | |
| | Hildebrand & Liu 1965 | Positive | |
| | Pondy 1969 | Positive | |
| | Bidwell & Kasarda 1975 | Negative | |

departments of counties or municipalities. Therefore, when computing administrative/clerical intensities for these properties, the ratios can be misrepresented.

NUMBER OF SPECIALTIES--PERFORMANCE

Research in this area is conflicting (Table 12). It is, therefore, difficult to assess the relationship between number of specialties and performance. One study suggests a positive relationship between number of specialties and innovation. Innovation, as has been stated earlier, may be an important element of organizational performance and critical to the transit industry.

FORMALIZATION/STANDARDIZATION--PERFORMANCE

Both formalization and standardization have been found to be associated with intra-organizational stress. The available research suggests as formalization and standardization increase there is a concomitant increase in performance (Table 12). This increase may be the result of reducing role conflict and ambiguity in individuals thereby increasing performance.

CENTRALIZATION--PERFORMANCE

The literature in this area is conflicting. There are indications of positive, negative, zero, and curvilinear relationships (Table 13). The dissimilar findings are not conducive to generalization. However, research strongly suggests a parabolic relationship. There may be an optimal range of centralization for an organization. In other words, both too little centralization and too much centralization may be dysfunctional. This imbalance of centralization may well impact organizational performance.

TABLE 12

| Structural Dimension | Investigation | Relationship | Trend |
|--|-------------------------|--------------|---|
| NUMBER OF SPECIALTIES AND PERFORMANCE | Litwik 1961 | Negative | Research in this area is conflicting. Difficult to assess the relationship between number of specialties and performance |
| | Corwin 1970 | Negative | |
| | Hage & Dewar 1973 | Positive | |
| | Baldrige & Burnham 1975 | Positive | |
| | Beck & Betz 1975 | Positive | |
| | Reimann 1975 | Zero | |
| FORMALIZATION/ STANDARDIZATION & PERFORMANCE | Hage & Dewar 1973 | Zero | Although there is conflicting evidence, there is no support for a negative relationship. |
| | Rogers & Mulnar 1976 | Zero | |
| | Harrison 1974 | Positive | |
| | Baum & Youngblood 1975 | Positive | |
| | Schuler 1975 | Zero | |

TABLE 13

| Structure Dimension | Investigation | Relationship | Trend |
|---------------------------------|--------------------------------|--------------|--|
| CENTRALIZATION & PERFORMANCE | Leavitt 1951 | Positive | The evidence does not allow an unambiguous statement about the association between centralization and performance. However, the results suggest that the relationship is non-linear. |
| | Fleishman 1953a | Curvilinear | |
| | Fleishman 1953b | Curvilinear | |
| | Halpin 1954 | Curvilinear | |
| | Shaw 1954 | Negative | |
| | Fleishman, Harris, & Burt 1955 | Curvilinear | |
| | Fleishman 1957a | Curvilinear | |
| | Fleishman 1957b | Curvilinear | |
| | Halpin 1957 | Curvilinear | |
| | Weiss 1957 | Zero | |
| | Tannenbaum & Kahn 1958 | Negative | |
| | Mulder 1960 | Positive | |
| | Burns & Stalker 1961 | Positive | |
| | Likert 1961 | Negative | |
| | Tannenbaum 1961 | Negative | |
| | Fleishman & Harris 1962 | Curvilinear | |
| | Zald 1962 | Positive | |
| | Roby ET. AL. 1963 | Positive | |
| | Bowers 1964 | Negative | |
| | Smith & Ari 1964 | Negative | |
| | Contini 1967 | Positive | |
| | Miller 1967 | Negative | |
| | Hornstein 1968 | Negative | |
| | Baker & Baloff 1969 | Positive | |
| | Kriebel & Lave 1969 | Positive | |
| | Skinner 1969 | Curvilinear | |
| | Corwin 1970 | Negative | |
| | McMahon & Perritt 1971 | Positive | |
| | Hage & Dewar 1973 | Zero | |
| | Levine 1973 | Negative | |
| | Luke ET. AL. 1973 | Negative | |
| | Fielder & Gillo 1974 | Zero | |
| | Harrison 1974 | Negative | |
| | Beck & Betz 1975 | Negative | |
| Reimann 1976 | Zero | | |
| Sorensen & Baum 1975 | Negative | | |
| McMahon 1976 | Negative | | |
| McMahon & Ivancevich 1976 | Negative | | |
| Pennings 1976 | Positive | | |
| Rogers & Mulnar 1976 | Positive | | |

SUMMARY

There are several clear associations between structural dimensions and performance. For instance, the size of the organization is positively related to control, institutional management, and innovation. There is evidence that larger organizations utilize more stringent control procedures, participate in relatively more boundary spanning activity, and are more innovative than smaller organizations. All three behaviors should improve organizational performance.

Turnover and absenteeism have clear relationships with performance as well. There is no evidence that turnover is associated with the size of the organization. However, there is strong evidence suggesting that larger organizations do differ in the rates of employee absenteeism compared to smaller organizations. Apparently, absenteeism increases with the size of the organization.

The influence of other structural dimensions are unclear. Relationships between performance, span of control, vertical span, and administrative/clerical intensity are weak or conflicting. These associations, based on the current literature, cannot be stated with authority.

The relationships between performance and formalization/standardization and centralization are also conflicting. However, as was the case with these dimensions and attitudes, there is evidence of a non-linear relationship. A recognition of this curvilinear relationship partially explains the conflicting evidence.

As previously mentioned, the literature on structural-performance relations is among the most confounding in the field of organization behavior.

Although some important and encouraging work is being done, evaluations of research and generalizations concerning the nature and direction of relationships are tenuous. However, the lack of generalizability does underscore the timeliness of this research.

Research may correct the deficiencies in the current literature. Examination of the relationships between structural dimensions and performance indicators in the transit industry will hopefully produce information useful to organizational theory. This research aims to advance the theoretical bases of structural-performance relations and assist the transit industry to improve the services offered.

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