A Study of the Relationships Between Span of Supervision and Leadership Directiveness in Fast-Food Restaurants.

Foad Derakhshan

Louisiana State University and Agricultural & Mechanical College

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FAST-FOOD RESTAURANTS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
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in partial fulfillment of the
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Doctor of Philosophy

in

The Department of Management

by

Foad Derakhshan
B.S., Tehran Business College, Tehran, 1973
M.S.A., Louisiana State University, 1976
December, 1979
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A漩TRACT

The concepts of span of supervision and leadership are among the earliest issues which attracted the attention of organizational and behavioral theorists; however, the studies that focus on the relationship between the two variables are rare and inconsistent. This study attempted to detect correlations between span of supervision and several dimensions of leadership directiveness. Two types of variables measured the directiveness of leadership. The first class of variables included the commonly used leadership variables of "initiation of structure" and "consideration." The second class of variables possessed structural attributes and included "participation in decision making" and "hierarchy of authority," which together measure the degree of centralization. It was not the purpose of this study to search for causal relationships between the variables. The generalization of the findings is limited by the methodological restrictions.

To test the hypotheses proposed, nine fast-food restaurants were chosen for field research since they presented particular characteristics which made them suitable for this study. A sample of 94 employees and their supervisors completed an "Employee Questionnaire" and a "Supervisor
Opinion Questionnaire," respectively. The questionnaires used in the research were composed of subscales from instruments used in The Ohio State University leadership studies (1963 revisions) and in centralization studies by Hage and Aiken (1967). The questionnaires were pretested and revised before being used for data collection in the field.

The analysis of the results indicated that the supervisors with a wider span were perceived to exert less initiation of structure and to show less consideration, while when the span was narrow the supervisor tended to initiate more structure and to be more concerned with employees' feelings. The relationship between the two variables of initiation of structure and consideration was a positive one. A possible explanation of the findings was provided with a reference to the situational context of the restaurants. Earlier research suggested that due to the labor problem in restaurants a coordinative "benevolent autocracy," i.e., high initiation of structure joined with high consideration, seems to be the appropriate leadership style but it is hard to achieve as the span widens. This explanation is also confirmed by the finding of the study that beyond the span of 18 to 20 both dimensions of leadership behavior declined sharply.
Interestingly, how the supervisor acted was unrelated to his/her belief on what constituted an "appropriate" leadership behavior. The older managers and managers with less work experience believed in the exertion of more initiation of structure and more consideration; however, they did not practice what they preached. In general, the more experienced managers' action came closest to what was referred to as "benevolent autocracy." Employee sex had an effect on how the employee perceived the supervisor's behavior; therefore, it affected the measurement of relevant relationships. Contrary to common beliefs, no significant relationships were found between the span and the supervisors' choice of a participative leadership style, or his delegation of authority.
CHAPTER I

INTRODUCTION

The concepts of organizational structure, power, and leadership are interrelated. In fact, a closer examination of these concepts reveals that power acts as a mediating factor which relates structural properties, such as span of supervision and centralization, to leadership dimensions. No inquiry into the relationship between structural and leadership variables is adequate without an exploration into the realm of power.

One of the most astonishing demonstrations of the effects of power on the behavior of people who possess it was provided by the work of Zimbardo. In a study conducted at Stanford University, Zimbardo and his associates used college students to simulate a prison environment. Half of the subjects was randomly selected to serve as guards, and the other half was assigned the role of prisoners. The results were startling. The guards quickly became highly aggressive and the prisoners very passive.

Typically, the guards insulted the prisoners, threatened them, were physically aggressive, used instruments (night sticks, fire extinguishers, etc.) to keep the prisoners in line and referred to them in impersonal, anonymous, deprecating ways.... From the first to the last day there was significant increase in the guards' use
of most of these domineering, abusive tactics.¹

The intense aggression and sadism shown compelled the experimentors to terminate the planned two-week experiment after six days.²

On the basis of the above findings, one may generalize that, given the opportunity, man tends to actively exercise his power and authority over his subordinates. For the sake of ethical considerations, such generalization makes the tasks of delegating authority, formalizing rules and procedures, and determining the span of control extremely critical. Aware of its importance, administrative theorists have challenged the task of span determination throughout the years. In the past, these theorists have suggested that a narrow span is associated with tighter control over subordinates, while a wider span is related to a decentralized supervision.³ Furthermore, some behavioral scientists have proposed that human limitation on the span of attention is a major determining factor for the span of control.⁴ Combining these propositions

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² Kipnis, "Does Power Corrupt?," pp. 33-41.


with the generalization drawn on the findings of Zimbardo, one can stipulate that, given the opportunity of a narrow span, the leader tends to exercise more control over his subordinate, while, when the span is large and therefore the leader's attention more scattered, he would have no choice but to exert less control. Empirical findings on this stipulation are mixed and inconclusive and not always in line with the predictions of the above stipulation. Hemphill, through empirical research, suggests that:

...there is a tendency for the leadership role in the larger group to take on a greater degree of impersonal direction connected with firmness and impartiality in enforcement of rules and regulations. Subordination of members to leader receives greater emphasis in larger groups as indicated by...less 'listening to others'....'

Resolution of the controversy over span/leadership relationship requires further research. This study is a response to such a need. Further explanation of the purpose of this study will clarify the direction in which this research could contribute to fulfill the need for more inquiry into this area.

Importance of Leadership and Span of Supervision

The great volume of what has been written on leader-

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5 Hemphill, "Relations Between the Size of the Span and the Behavior of 'Superior Leaders'," p. 19.
ship indicates the importance of leadership in effectiveness
and efficiency of human organizations. One can hardly exag-
gerate the significance of leadership in the achievements of
social, political, and economic establishments. Since the
earliest stages of human civilization, any major achievement
has usually been attributed to the characteristics of the
behavior of an outstanding person, the leader. What has not
been accomplished by the inspiration of great leaders? Peace
and war, the creation of nations and their destruction are
forced by them. A brief glance through history reveals that
almost anything is possible to achieve with a proper blend
of a leader and an organization.

A great leader who is not accepted by his followers
is no leader at all. The organization, formed of those who
accept the leader's command, is of equal, if not more, impor-
tance in accomplishing seemingly impossible goals. To under-
stand what distinguishes an effective organization from an
ineffective one, an insight to organizational properties, as
well as to leadership characteristics, is necessary. One of
the earliest properties which attracted the attention of
organization builders, leaders, and scholars of the field was
the span of supervision. In their review of 31 empirical
studies, Thomas and Fink conclude that "...group size (span
of supervision) is an important variable which should be
taken into account in any theory of group behavior." Furthermore, these authors suggest that "...future research on group size should proceed more systematically than in the past." One such systematic inquiry to the realm of span of supervision would be to investigate the interdependence between the span of supervision and leadership dimensions.

Purpose of the Study and Statement of the Problem

The purpose of this research is to investigate the correlation between the span of supervision and the directiveness of leadership as specified along the dimensions of a) initiation of structure, commonly known as task orientation, b) consideration or relationship orientation, and c) perceived centralization. It is also the intention of this study to determine whether the actual behavior of the leader along the two dimensions of initiation of structure and task orientation is consistent with his/her expressed leadership opinion along the same two dimensions. Although no attempt is made to identify causal relationships, the findings of this research may lead to recommendations about span of supervision or leadership style.

Definition of the Variables of the Research

A prerequisite to the formulation of the hypotheses

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7 Loc cit.
concerning relationships between span and leadership properties is the identification and definition of relevant variables. The variables of this study are identified under the two basic dimensions of structural variables and leadership variables.

Structural Variable

**Span of Supervision:** span is defined as the number of subordinates to a leader, or the number of people reporting to him. The span could be specified as an average or a maximum number. In this research, span is defined as "the maximum number of subordinates supervised at one time."

Leadership Variables

Since the Ohio State leadership studies in 1945, the most popular and commonly used dimensions of leadership theories are two: initiation of structure (representing task orientation of the leader) and consideration (relationship orientation). Due to their popularity, these two variables are used here to represent leadership styles.

**Initiation of Structure:** reflects the extent to which the supervisor facilitates or defines

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group interaction toward goal attainment. The leader does this by clearly defining his own role, and by letting his followers know what is expected.

Consideration: reflects the extent to which the superior is considerate of the feelings of those under him. It comes closest to representing the "human relations" approach toward group members. To do so, the leader regards the comfort, well-being, status, and contributions of the followers.

Structural/Leadership Variable

Centralization: Although a structural variable in nature, centralization is used here to indicate directiveness of leadership style. Centralization is defined as the degree to which power is concentrated in an organization. It is mea-

11 Stogdill, Manual for Leader Behavior Description Questionnaire - Form XII, p. 3.
12 Fleishman, loc. cit.
13 Stogdill, loc. cit.
15 Miller, loc. cit.
sured along two dimensions. The first measure is "participation in decision-making" - how much the individual participates in decisions about the allocation of resources and the determination of organizational policies. The second measure of centralization is "hierarchy of authority." This refers to the degree to which the organization member participates in decisions involving the tasks associated with his position.

Hypotheses

As noted earlier, due to inconclusive evidence, the question of whether a relationship between span and directiveness of leadership exists has not been adequately explored. The first four hypotheses tested in this study have been formulated to provide an answer to this question.

HYPOTHESIS I: Span of supervision \((s)\) is significantly related to "personal participation" as an index of centralization \((C_l)\).

HYPOTHESIS II: Span of supervision \((s)\) is significantly related to "hierarchy of authority" as an index of central-

\[16\] Hage and Aiken, *op. cit.*, pp. 78-79.

\[17\] *Loc. cit.*
HYPOTHESIS III: Span of supervision (s) is significantly related to actual "initiation of structure" as an index of leadership as perceived by subordinates (L1A).

HYPOTHESIS IV: Span of supervision (s) is significantly related to actual "consideration" as an index of leadership as perceived by followers (L2A).

Whether the leadership behavior of the supervisor is consistent with his personal beliefs is a question that is answered by testing the following two hypotheses.

HYPOTHESIS V: Actual "initiation of structure" by the leader (L1A) is significantly related to the leader's expressed beliefs about "initiation of structure" (L1A).

HYPOTHESIS VI: Actual "consideration" by the leader (L2A) is significantly related to the leader's expressed beliefs about "consideration" (L2A).

The correlation analysis determines whether a positive or a negative relationship exists between the variables in each hypothesis.

Scope and Limitations of the Study

This study focuses on a sample of fast-food opera-
tions in the Greater Baton Rouge area. Explanation of why and how this sample is selected is provided in the chapter on methodology, later in this thesis. Obviously, the findings of this study are restricted by its sampling limitations.

Another limitation to this study is the use of perceptual data. Perceptions of actual behavior seldom perfectly match the reality of these behaviors. However, this limitation is common to most field surveys and should not hamper the validity of the study.

A third possible limitation concerns the usual problems associated with the administration of questionnaires. Problems such as faked, poorly thought out, or incomplete responses could result from lack of understanding of respondents with little education, etc. These problems have been minimized by making the questionnaires shorter, rewording some items of the instruments to make them easy to understand, and increasing the sample size to compensate for unreturned or incomplete questionnaires.

The detection of correlations between the variables under study is the primary end to this paper. This research makes no attempt to detect causal relationships between the variables. Such a detection requires a level of sophistication beyond that of the methodology applied in this study.

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18 Williams, "On Administering Questionnaires in Organizational Settings," pp. 93-103.
Justification for the Study

Early contingency theories of leadership postulated that an optimum leadership style for a given organization was a function of three major forces: forces in the leader, forces in the subordinates, and forces in the situation. Since then, scholars in the field have directed their attempts toward verification of significant variables in each of these three dimensions. Structural variables are among the major situational variables that are expected to affect leadership. Although structural properties and their leadership implications have attracted the attention of many field researchers, among these properties, span of supervision is one factor that its effects on leadership still need to be further explored. Empirical findings on the correlation between the span of supervision and the leadership variables are scarce and inconclusive. The few studies that concern themselves with such a relationship barely touch upon the subject, and

19Schmidt and Tannerbaum, "How to Choose a Leadership Pattern," p. 98.


21For some major studies on this subject see: Lawrence and Lorsch, "Differentiation and Integration in Complex Organizations," pp. 1-47; Woodward, Management and Technology: Burns and Stalker, The Management of Innovation; Pen- nings, loc. cit: and Hage, loc. cit.
usually discern it as an extra finding, an offshoot of the original research. Obviously, since the primary purpose of such studies differed from, and were not restricted by, the detection of such a correlation, methodological problems involved in the interpretation and generalization of these offshoot correlations are hard to ignore - a fact that creates a definite need for a research which is particularly designed to detect such a correlation. As a response to this need, this study provides some clarification on the relationship between span of supervision and leadership properties.

The findings of this research may lead to suggestions for organizational design as well as for selection of the leader. At the present time, most organizational designs, and therefore the span of supervision, are determined independently from leadership inclinations of the supervisor. The detection of a correlation between these variables means that the determination of the two dimensions can no longer take place independently from each other. That is, either the right leader, with appropriate inclinations, should be assigned a group of a given size, or the span of supervision has to be modified to match the leader's leadership inclinations.

Preview

The following chapter presents a selective review of literature relevant to this study. Chapter III describes the research methodology, including detailed information on
sampling, measurement, instruments, and data analysis techniques used. The results of the study and the findings are delineated in Chapter IV. The fifth chapter concludes this presentation with interpretations of the findings of the research and suggestions for future studies.
CHAPTER II

REVIEW OF LITERATURE

The relevant material in the literature dealing with span of supervision, leadership, and centralization is discussed in this chapter. The studies concerning each of these concepts are numerous and diverse. Since an exhaustive presentation of the three topics is impossible, the author has been selective in the review of pertinent material. Consequently, there are many publications dealing with this area of inquiry that are not presented.

A central theme of this study is the span of supervision. Most studies on span focus on the determination of optimum spans or the maximum number of subordinates a given supervisor can handle.¹ Urwick prescribed a span of control with a maximum of six people, while Worthy argued for a larger span of control because it provided a greater opportunity for individual development and higher morale. Entwistle and Walton noted that factors such as organization size and function affected the span. In turn, Porter and Lawler found a correlation between size and morale. This chain of studies diverted

the researchers' interest to a whole framework of related structural variables. Woodward and "wickson, Pugh, and Phe-
sev related first-line supervisors' span of control to tech-
nology utilized by the firm. They concluded that, although there was no "one best" span for all situations, it seemed that the more successful organizations did utilize a span close to the median of their particular production group type. This fact suggested that there might be an optimum span for a given work situation.

An innovative approach to span was proposed by House and Miner. In demonstrating the existing division within organization theory between management and behavioral views, they use the frequently parallel literature on span of control and correlation of group size as an example. This work presents a diverse review of literature on span of supervision and its "behavioral counterpart, group size. It is beyond the scope of this research to present a review of this article; however, the interested reader is encouraged to refer to the original source.

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2 Dunnette, Handbook of Industrial and Organizational Psychology, pp. 1179-1179.

3 Woodward, Industrial Organizations: Theory and Practice: and "wickson, Pugh and Phesev, "Operations, Techno-

Litterer provides a list of factors influencing the span of control.⁵ Limited human capability to handle interpersonal relationships, type of technology utilized by the organization, organization size, hierarchical level, use of personal assistants, supervision from others, discretion exercised by subordinates, stability of environment, and configuration of the hierarchical structure are among the factors influencing the span of supervision. The span of control, in turn, affects the shape of organizational hierarchy. If an organization has broad spans of control, it will have fewer levels and a "flat" structure. An organization with the same number of members but employing narrow spans of control will have more levels and a "tall" structure.⁶

The span might also affect, and in turn be affected by, the directiveness of leadership. The remainder of this section will present relevant material in the literature regarding two major categories pertinent to this study. The following discussion focuses on the relationship between span and leadership styles. Then, a review of the literature on the relationship between span and centralization concludes the present chapter.

⁶Ibid., pp. 569-570.
Span of Supervision/Leadership

The advocates of a broad span of control argue that a narrow span and the concomitant "tall" organization structure make for red tape and difficulties in communication; furthermore, supervisors with short spans may tend to delegate less and to supervise more closely, thus damaging the morale. As noted earlier, evidence for and against this argument exists. Contrary to the evidence that supports this argument, Hemphill provides evidence that there is a tendency for the leadership role in the larger group to take on a greater degree of impersonal direction connected with firmness and impersonality in enforcement of rules and regulations. Hemphill's proposition implies that a wider span is correlated to: a) a higher task orientation, and b) lower consideration on the leader's part. The interpretation of Hemphill's findings requires extreme caution due to the methodological limitations of his study. One might criticize his research design on the ground that little control was exerted to exclude the effect of intervening variables that could contaminate the results of his study.

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7 House and Miner, loc. cit.
8 Worthy, loc. cit.
9 Hemphill, "Relations Between the Size of the Span and the Behavior of ‘Superior Leaders’," pp. 11-22.
The question of whether the type of leadership skill needed is different for spans of different sizes has attracted the attention of some scholars in the field. After reviewing several studies, Forehand and Gilmer stated that in dealing with a larger group, a face-to-face technique of management gives way to subgroups within the larger unit in coordinating behavior.\(^{10}\) For instance, in his famous study in the restaurant industry, Whyte discovered that as organization size increased there was increasing difficulty in coordinating activities.\(^{11}\) Homans and Hemphill found that as groups became larger, demands on the leader became more numerous, more complex and more exacting, and the members of the group became more tolerant of highly structured and directive leadership.\(^{12}\)

Scan of Supervision/Centralization

As a structural property, centralization, i.e., how power is distributed among social positions, has been subject to extensive study by organization theorists. The findings of an experiment conducted by Morse and Reimer suggested that centralization was related to a higher rate of production but also to a lower rate of job satisfaction.\(^{13}\) In their


\(^{12}\) Homans, The Human Group.

\(^{13}\) Morse and Reimer, "The Experimental Change of a Major Organizational Variable," pp. 120-129.
communication studies, Barelas and his associates obtained similar findings.\textsuperscript{14} Blau and Scott's studies of assembly-line work showed that high centralization was associated with high routinization of tasks (high formalization), which in turn was related to higher production, higher productivity (efficiency), but at the same time to lower job satisfaction and higher levels of turnover.\textsuperscript{15} There are numerous studies which suggest that a higher degree of centralization is desirable although it may have negative effects on employee morale and satisfaction.\textsuperscript{16}

Based on the findings of a questionnaire survey, Worthy stated that a "...'flat' decentralized organization structure calling for wide spans at the middle and upper echelons is superior, as far as employee morale is concerned, to the 'tall' centralized organization structure based on a narrow span of control."\textsuperscript{17} This assertion implies a negative correlation between span and centralization. As stated before, in this study centralization is measured along two dimensions of participation in decision making and hierarchy of authority. Using the same dimensions, Pennings found a

\textsuperscript{14}Barelas, "Communication Patterns in Task-Oriented Groups," pp. 669-682.

\textsuperscript{15}Blau and Scott, \textit{Formal Organizations}, p. 48.

\textsuperscript{16}For a review of the literature, see Hage, "An Axiomatic Theory of Organizations," op. 289-320.

\textsuperscript{17}House and Miner, \textit{op. cit.}, p. 455.
negative correlation between the chief executive's span of control and centralization. The correlation between span and participation in decision making was -.53, and the correlation between span and hierarchy of authority was slightly less but still significant. Whether the findings of Worthy and Pennings are contradictory, complimentary, or simply unrelated could form the subject of a debate. However, before any further interpretation, the reader needs to know that the correlations found by Pennings were hardly significant.

The controversy over predictions of most span/centralization studies is not limited to the findings of Pennings and Worthy. Healy studied the span of control in 524 organizations and concluded that executives with larger spans tend to involve all assistants in decision making more than executives with smaller spans. Contrary to Healy's findings, Heller and Vulk studied 23 managers' and supervisors' behavior and concluded that the sharing of decisions with subordinates was greatest when the leader had a small span of control. The review of literature on span/centralization relationship, although inconclusive, presents a

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18 The latter coefficient of correlation was -.41. See Pennings, "Measure of Organizational Structure: A Methodological Note," p. 493.

19 Ibid., p. 696.

20 Healy, Executive Coordination and Control.

consistent theme. The relationship is not as simple as it appears in the first place. This fact justifies a more in-depth inquiry into the relationship between the two variables.
CHAPTER III

METHODOLOGY

This chapter presents the methodology utilized in this research. The first part of the chapter identifies the characteristics of the work group suitable for this study. The sample and method of data collection are discussed next. The third part of the chapter explains the instruments used in the research, and then, a discussion on the data analysis techniques is presented. A brief description of the pretest and the revision of the questionnaire conclude the chapter.

The Type of Work Group Sampled

A field survey technique was selected for the purpose of this study due to the fact that it provided for more external validity in comparison with a laboratory experiment. However, field surveys commonly present the problem of low internal validity. In the real work group, a number of intervening variables interact with the variables under study and complicate the detection of a "pure effect." To preserve the internal validity in a survey, the methodology should be designed to detect and reduce the contaminating effects of major intervening variables. A number of intervening factors pertinent to this study and the methods used to reduce their effects are discussed in the following paragraphs.
Technology and Type of Industry

Many theorists suggest that the type of industry and technology are major determinants of the span of supervision.\(^1\) Another group of theorists argue that the type of industry and technology also have an impact on the directiveness of leadership style.\(^2\) To eliminate this technology effect, the sample was taken from organizations within the same industry.

Organization Size

Porter and Lawler found that the size of organizations had an impact on satisfaction and its relationship to structure (span of supervision included).\(^3\) Their study revealed that, in organizations with more than 5,000 employees, a tall structure, therefore a narrow span, led to more satisfaction, while in organizations with less than 5,000 employees, higher satisfaction was related to a flat structure, a wide span.\(^4\) To eliminate the organization size effect, the groups in the sample were selected from organizations of comparable size.

\(^{1}\)See: Woodward, Management and Technology; Lawrence and Lorsch, "Differentiation and Integration in Complex Organizations," pp. 1-47; and Burns and Stalker, The Management of Innovation.

\(^{2}\)Durin, Leadership in Productivity: Some Facts of Industrial Life; and Tausky, Work Organizations.

\(^{3}\)Porter and Lawler, "Properties of Organization Structure in Relationship to Job Attitude and Behavior," p. 123?.

Occupation

The type of occupation, professional job or non-professional blue-collar job, could have had an impact on the results of this study. Previous studies have found differences between professionals' and blue-collar workers' attitudes and reactions towards leadership and other organizational attributes. To avoid the intervention of an occupational effect, the sample for this study had to be selected from groups with a comparable occupational structure.

Job Level

Hulin and Blood proposed that job level was an influential dimension in the determination of the worker's responses. Several studies have provided evidence to this proposition. The implication of these findings for this study was that the work groups included in the sample needed to be of comparable organizational level.

Higher-Level Management Leadership Style

The actual behavior of a leader is influenced by the manner he himself is supervised. Fleishman found a

5 Most contingency theories of leadership discern these differences in details. For example, see: Schmidt and Tannerbaum, "How to Choose a Leadership Pattern," pp. 99-100.


7 Kornhauser, Mental Health of the Industrial Worker.

correlation between the behavior of a supervisor and that exhibited by his boss. He noted that men who worked for considerate bosses were reported to be more considerate toward their subordinates than were men working under less considerate supervisors. A similar chain of effect was found for initiation of structure. Such an organization climate effect was reduced in this study by selecting work groups that were somewhat insulated from higher organizational levels; therefore, the leader had considerable independence in selecting his own leadership style.

Personal Inclinations of the Leader

A leader's personality type may have an impact on his behavior and the type of leadership approach he chooses, thus, on the relationships subject to this study. Although randomization of the selected sample reduced this effect to some extent, by no means it could have eliminated the effect completely. An appropriate way to approach this problem was to measure the supervisor's leadership inclinations and to determine their relationship to his actual leadership behavior. The hypotheses V and VI stated earlier were provisions embodied in this research to accomplish such a purpose.

A type of work group that was relatively free of all the above-mentioned intervening effects was found in

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fast-food restaurants. Such a group performed a relatively homogeneous task, in different stores, and was relatively independent from any larger organization. The span of supervision in these groups varied, a condition that was a prerequisite for a work group needed in this study; furthermore, there was a large number of such stores in the area, a fact which allowed a better selection of the sample.

The Sample and Method of Data Collection

This study utilized a field survey technique for the data collection purpose. A sample of work groups in fast-food operations in the Greater Baton Rouge area was selected. The selection of the fast-food restaurants was based on four criteria. These criteria, in the order of importance, were variety of span, diversity of the type of business, cooperation and interest of management, and geographic dispersion. Table 3-1 presents the nine restaurants included in the sample and the span for the corresponding work groups which ranged from 3 to 24. The restaurants belonged to different franchised operations, and were located in different parts of the city. From eleven restaurant managers contacted, nine showed enthusiasm and cooperated, one was enthusiastic but quit his job before the completion of the data gathering process, and one was too busy to involve himself and his employees in the research. The last two restaurants were dropped from the sample.
### Table 3-1

**Fast-Food Restaurants in the Sample**

<table>
<thead>
<tr>
<th>Restaurant</th>
<th>Location</th>
<th>Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Beef &amp; Run</td>
<td>Airline Hwy.</td>
<td>8</td>
</tr>
<tr>
<td>2. Burger King</td>
<td>Highland Rd.</td>
<td>8</td>
</tr>
<tr>
<td>3. Burger King</td>
<td>Perkins Rd.</td>
<td>12</td>
</tr>
<tr>
<td>4. Der Wienerschnitzel</td>
<td>Highland Rd.</td>
<td>6</td>
</tr>
<tr>
<td>5. Wendy's</td>
<td>Florida Blvd.</td>
<td>18</td>
</tr>
<tr>
<td>6. Wendy's</td>
<td>Lake St.</td>
<td>20</td>
</tr>
<tr>
<td>7. McDonald's</td>
<td>Sherwood Forest Blvd.</td>
<td>24</td>
</tr>
<tr>
<td>8. Henry's Chicken Shack</td>
<td>Highland Rd.</td>
<td>3</td>
</tr>
<tr>
<td>9. Losaparte's Fried Chicken</td>
<td>Nicholson Dr.</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total Number of Employees Surveyed** 103
The data collection process typically started with the researcher contacting the manager of the restaurant, presenting a brief description of the study, and inquiring about the manager's interest in participating in the research. In few occasions, the manager required the permission of the regional office before the actual discussion of the study. This permission was usually granted verbally, and the regional offices were very helpful in securing their managers' cooperation. After the interest and the commitment of the restaurant manager was secured, he was provided with a more detailed description of the data gathering process, and was asked to complete a "Supervisor Opinion Questionnaire" (for samples of this questionnaire and the accompanying cover letter see Appendices D and E). Then, through interviewing, the researcher determined the span of supervision for the shift under study. This method of span determination was chosen over the self-reporting technique because in the pretest of the questionnaire and during early stages of the research, the researcher discovered that there was a tendency among the managers to overstate their span of supervision, particularly when self-reporting it. This overstatement phenomenon might be due to the prestige managers generally attach to the supervision of a large work group.10 At the

10 See the discussion on "Empire Building" in Hicks, The Management of Organizations, pp. 371-372.
end of the meeting, the manager was asked to distribute some "Employee Questionnaires" among the employees of the shift under study. Each employee in the shift was asked to complete a questionnaire, and the total number of Employee Questionnaires collected was used to verify the accuracy of the span of supervision determined through the interview. Samples of the Employee Questionnaire and the accompanying cover letter are found in Appendices C and F.

To improve the accuracy of the reported data and to ensure the confidentiality, the employee was asked to insert the completed questionnaire in a uniform envelope, seal the envelope, and drop it in a ballot box. For a sample of such self-instructed envelope see Appendix G.

The Instruments

The data for this research was gathered through two instruments: one completed by the managers and one administered to the employees of the groups under study. The following sections present a description of these questionnaires.

Employee Questionnaire

This questionnaire was constructed to measure the directiveness of leadership style along the four dimensions of initiation of structure, consideration, personal participation in decision making, and hierarchy of authority (for a definition of the variables refer to the "Definition of
the Variables in the Introduction). The first two subscales are a modification from two of the ten subscales in the 1963 revised edition of the Leader Behavior Description Questionnaire - Form XII by Ralph M. Stogdill. These two subscales were chosen over other subscales of the questionnaire due to the fact that they were the most popular dimensions used in leadership studies, and consistently resulted in higher reliability as compared to other subscales. The reliability coefficients for the initiation of structure subscale range from .76 to .89 for various test groups.¹¹ The permission to use these two subscales was obtained from the Director of Supportive Services, College of Administrative Sciences, The Ohio State University. A copy of the letter requesting this permission and the subsequent permission are presented in Appendix A.

The last two subscales of the Employee Questionnaire correspond to centralization and were developed by Hage and Aiken.¹² This centralization instrument has been used by designers in several empirical studies.¹³ Copies of the letters requesting the permission to use these subscales

¹¹ For reliability information see: Fleishman, "The Measurement of Leadership Attitude in Industry," p. 155; and also Stogdill, Manual for the Leader Behavior Questionnaire - Form XII, pp. 8-11.

¹² Hage and Aiken, "Relationships of Centralization to Other Structural Properties," pp. 78-79.

¹³ Loc. cit.
and the subsequent permissions by the authors are presented in Appendix H. A copy of the subscales in the Employee Questionnaire can be found in Appendix A.

Supervisor Opinion Questionnaire

This instrument is composed of two subscales that are basically the same as the first two subscales used in the Employee Questionnaire, subject to minor modifications. These subscales correspond to two subscales of the "Leader Opinion Questionnaire" used in the Ohio State Studies. The reliability coefficients for an industrial-foreman test group were .70 and .79 for consideration and initiation of structure, respectively.¹⁴ A copy of the subscales of this questionnaire is attached as Appendix P.

The Data Analysis Techniques

This section provides a brief description of the scoring formats of the instruments and the type of statistical test utilized in this study.

Scoring of Instruments

For Part I and Part II of the Employee Questionnaire, as well as for the corresponding parts in the Supervisor Opinion Questionnaire, the sum of the scores for the ten items of each subscale constituted the score for that

¹⁴Fleishman, op. cit., p. 155.
subscale (refer to the scoring notes under each scale in Appendices A and B).

For Part III and Part IV, the sum of the scores for the items of each subscale constituted the score in that scale (refer to Appendix A for the scoring format of each subscale item in the Employee Questionnaire).

Type of Test Utilized

The nature of the research dictated the use of correlations among the variables associated with each concept. The characteristics of the regression analysis and the Pearson's correlation coefficient made this method of analysis an appropriate choice for this study. Furthermore, this type of correlation technique has been used in previous research of this nature. In a study on the relationships of centralization to other structural properties, including span of supervision, Hage and Aiken used Pearson's correlation coefficient. In their study, these researchers used the same centralization subscales utilized in this research. In his 1973 study, Pennings also used a Pearson correlation to correlate some structural variables, including centralization.

\[^{15}\text{Hage and Aiken, loc. cit.}\]

\[^{16}\text{Pennings, "Measure of Organizational Structure: A Methodological Note," pp. 68-705.}\]
Regression analysis was also used by The Ohio State University researchers in their leadership studies. These researchers used the same leadership subscales applied in this study.17

The Pretest and Revision of the Questionnaire

To understand the nature of the problems that might occur during the data collection process, the questionnaires were pretested in a local fast-food restaurant. The purpose of this pretest was not to determine the validity of the reliability of the questionnaires, but to do a subjective evaluation of the problems in the data collection process. Some information on the validity and reliability estimates for various subscales was provided earlier.

In brief, the pretest led to several conclusions. In the first place, the subjects involved in the data collection had no problem in understanding the items of the questionnaires, or in relating them to their working environment. In the second place, some suggestions for the improvement of the layout of the Employee Questionnaire emerged. The "Revised Employee Questionnaire," as shown in Appendix C, presents these layout improvements. These modifications were in addition to the initial revisions made to adapt the

original subscales to the purpose of this study. The initial revisions are already reflected in the questionnaire subscales in Appendices A and B. A final conclusion was that no complication arose from the use of the "Supervisor Opinion Questionnaire," Appendix D. The revised questionnaires in Appendices C and D were used for data collection in the field.
CHAPTER IV

STATISTICAL ANALYSIS

The results of the statistical analysis are reported in this chapter. The chapter begins with an introduction to the analysis techniques utilized in the research, i.e., correlation and regression analysis. Some characteristics of the sample are then discussed. Next, correlation coefficients are presented for both focal relationships, related to the six major hypotheses in Chapter I, and peripheral associations which include classification variables. The focal relationships are further investigated through visual examination of scattered diagrams and fitted regression lines, and through analysis of the regression results. To conclude the chapter, a summary of statistical results is provided, and then the results are further summarized by hypothesis.

Correlation and Regression Analysis

Correlation Coefficient

As noted in Chapter II, the nature of this study recommended the use of correlation and regression analysis techniques. Among many measures of association, the correlation coefficient is the most conventional one. Its main advantage is that, since it is used so frequently, one soon gets an intuitive idea of what is a strong coefficient and
what is a weak one.\(^1\) In the simple linear regression, the data analysis technique used in this study, the correlation coefficient measures the strength of linear relationships between two variables. It "tells us whether or not it is reasonable to say that there exists a linear relationship (correlation) between \(x\) and \(y\)."\(^2\) The most widely used coefficient of correlation is the Pearson Product-Moment Correlation Coefficient, and is designated by the letter \(r\).\(^3\) The value of \(r\) ranges from zero, indicating that the two variables (\(x\) and \(y\)) are unrelated, to one, representing a perfect correlation between \(x\) and \(y\). The values of \(r\) closer to one reflect more relatedness, and the values of \(r\) closer to zero represent less association.\(^4\) The direction of the relationship is denoted by a valence; i.e., \(r\) may be either positive or negative. A positive correlation is indicated by a \(+r\), and a negative relationship is indicated by a \(-r\). In addition to the degree of relationship (\(r\)) and its direction (\(+\) or \(-\)), the probability that the relationship might be due to chance (\(P\)) also needs to be specified.

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\(^1\) Simon, Basic Research Methods in Social Science, p. 402.


\(^3\) Meyers and Grossen, Behavioral Research, p. 194.

\(^4\) Ibid., p. 194.
Other Statistics in Regression Analysis

The correlation coefficient is an important statistic, and frequently a sufficient one, if the researcher's intention is limited to the detection of the degree and the direction of association. However, commonly the objective of many scientific investigations is to make predictions. In this case, the relationship between known quantities and quantities to be predicted are expressed or approximated in terms of mathematical equations. The simplest and most widely used form of mathematical equation is the linear equation of two variables \( y = a + bx \). Linear equations are popular in research "not only because there exist many relationships that are actually of this form, but also because they often provide close approximations to relationships which would otherwise be difficult to describe in mathematical terms." 5

In addition to the coefficient of correlation, a linear regression model is represented by some other statistics. The Coefficient of Determination, \( R^2 \), represents the proportion of the total variation, in data, which is explained by the regression model. \( R^2 \) ranges from zero to one, reflecting no predictability to complete predictability of the regression equation, respectively. A presentation of \( R^2 \) should be followed by an F-statistic, determining the pro-

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bability of the approximated regression being different from zero.

Steps in Determining the Association Between Variables

In brief, to examine the association between two variables, the following steps are usually followed:

1. Preliminary Model Building.- At this stage the researcher identifies the variables and, ideally, conceptualizes a regression function explaining each relationship.

2. Correlation Matrix Formation.- This matrix is formed of correlation coefficients and corresponding probabilities for all possible relationships between variables. Such a matrix is typically produced by using any of various computer programs available. At this step the researcher examines the matrix and selects the statistically significant correlations of interest.

3. Scatter Diagram Plotting.- Such a diagram is plotted from the observed data and can be employed to suggest some tentative regression models. 6

4. Model Revision.- Occasionally, the original models formed from the first and the third steps above are revised by altering mathematical relationships. The

6Ostle and Mensing, Statistics in Research, p. 166.
criterion for improvement of the model is the selection of a higher $R^2$ which is statistically significant.

The four steps described above provided a frame of reference for the sequence of the analysis process used in this research.

Limitation of Correlation and Regression Analysis

In using correlation and regression analysis, the researcher should be aware of the shortcomings of these techniques. The strongest limitations of linear-regression analysis are caused by its underlying assumptions. Linearity of the relationship, unimodal and normal distributions, and continuity of variables are some of these restrictive assumptions. However, as noted in the previous chapter, these limitations should not be taken as a hindrance, and in fact they are not, since regressions are commonly used in studies of this nature. The limitations, of course, restrict the interpretation of the findings.

Some of the limitations of the regression analysis are inherent in the nature of the technique and can not be avoided. However, there are some limitations that can be reduced by improving the sampling procedure. The following

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part describes the sampling procedure for this study and some considerations which led to the improvement of the statistical significance of the results.

Characteristics of the Sample

Although normally the strength of a relationship is not affected by sample size, the judgement of whether or not there is a relationship is. In other words, by choosing a larger sample, the researcher could decrease the probability of obtaining a relationship by chance, therefore, increasing the statistical significance of the predicted correlation. Sample size determination, particularly for correlational studies, is a difficult but critical task because, if the sample is not large enough, the statistical significance of the estimated correlations will be low or even non-existing. As a general rule, more than 50 observations are needed to make a simple correlation a meaningful one.

In this study, the total of 103 employees of nine fast-food restaurants were included in the sample (for the criteria for sample selection refer to the section on sampling in Chapter III). From the total number of 103 ques-

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8Simon, op. cit., p. 402.

9The minimum sample size of 50 was recommended by both Dr. Part Farthing of the Department of Experimental Statistics, LSU, and Dr. Janet Fowler of the Quantitative-Methods Department, LSU.
tionnaires distributed, 94 of them were completed and returned. The high response rate of 91 per cent (94 ÷ 103 = 91%) was due to the careful data collection procedure and frequent follow-ups by the researcher. The large number of observations included in the sample, almost double the minimum number of 50 observations needed, improved the statistical significance of the estimated correlations (refer to Appendix I, the correlation matrix, for very low probabilities related to correlation coefficients indicating very high level of statistical significance).

Table 4-1 presents the sample characteristics in terms of mean score and the range for variables under study. The average span for the sample was 11.4 and the span ranged from 3 to 24. The mean score for initiation of structure expressed by managers was 45.2 with the range of 39 to 49. The scores for managers' expressed consideration averaged to 40.6, ranging from 37 to 45. The averages and their respective ranges for some classification variables in the Supervisor Opinion Questionnaire are also presented in Table 4-1. Scores for perceived (actual) initiation of structure, cal-

10 The actual number of questionnaires distributed was 123 and the total number returned was 113. However, one of the supervisors quit his job before submitting his questionnaire, a factor which led the researcher to delete a batch of 19 employee questionnaires associated with that supervisor. This deletion was necessary since incomplete arrays of data could not be used for the analysis.
### Table 4-1

**Characteristics of the Sample**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Code</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range of Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span</td>
<td>S1</td>
<td>11.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Expressed Initiation of Structure</td>
<td>I1R</td>
<td>4.2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>39</td>
<td>49</td>
<td>10</td>
</tr>
<tr>
<td>Expressed Consideration</td>
<td>I2P</td>
<td>4.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>32</td>
<td>45</td>
<td>12</td>
</tr>
<tr>
<td>Manager Age&lt;sup&gt;c&lt;/sup&gt;</td>
<td>MAGE</td>
<td>29.3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>22</td>
<td>42</td>
<td>20</td>
</tr>
<tr>
<td>Manager Experience in Present Job&lt;sup&gt;d&lt;/sup&gt;</td>
<td>VINJR</td>
<td>6.4&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Manager's Other Work Experience&lt;sup&gt;d&lt;/sup&gt;</td>
<td>MWEXP</td>
<td>51.3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Actual (Perceived) Initiation of Structure</td>
<td>I1A</td>
<td>41.6&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>Actual (Perceived) Consideration</td>
<td>I2A</td>
<td>37.7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>21</td>
<td>56</td>
<td>29</td>
</tr>
<tr>
<td>Centralization: Personal Consideration</td>
<td>C1</td>
<td>8.8&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>Centralization: Hierarchy of Authority</td>
<td>C2</td>
<td>12.6&lt;sup&gt;c&lt;/sup&gt;</td>
<td>8</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Employee Age&lt;sup&gt;d&lt;/sup&gt;</td>
<td>FAGE</td>
<td>21.1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>16</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Employee Experience in Present Job&lt;sup&gt;d&lt;/sup&gt;</td>
<td>EINJR</td>
<td>1.4&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0</td>
<td>16.7</td>
<td>16.7</td>
</tr>
</tbody>
</table>

<sup>a</sup> Average for restaurants (N=9)  
<sup>b</sup> Average for restaurant Managers (N=9)  
<sup>c</sup> Average calculated from employee responses (N=94)  
<sup>d</sup> Expressed in years
culated from Employee Questionnaires, averaged 41.6 and ranged from 15 to 50. The mean score for actual (perceived) consideration, from the same questionnaires, was 37.7 with the range of 21 to 50. The scores for the first dimension of centralization, participation, averaged 8.8 with the range of 4 to 20. The scores on the second dimension of centralization, hierarchy of authority, yielded the mean of 13.5 with the range of 8 to 20. The means and ranges for some classification variables extracted from the Employee Questionnaires are also provided in Table 4-1.

There were 8 male managers and a female manager in the restaurants included in the sample. Of 94 employees who completed and returned the questionnaires, 67 were female and 27 were male. The number of full-time employees was 49 and there were 47 part-time employees in the sample. These classification characteristics and the mean scores presented in Table 4-1 could lead to some generalizations, although limited, about the sample.

Correlation Coefficient Statistics

Correlation coefficient is a measure of association between two variables. The absolute value of the coefficient represents the strength of the relationship, and ranges from zero to one, indicating from none to perfect correlation respectively. The valence, the sign, of the coefficient identifies the direction of the association. A
positive coefficient indicates that the two variables increase and decrease together, while a negative coefficient represents the fact that, if one variable increases, the other will decrease and vice versa.

The correlation matrix is a table which includes all correlation coefficients and their respective probabilities of being estimated by chance for all possible pairs of variables. Appendix I presents the correlation matrix for all variables in this research. Under each correlation coefficient, the probability of the coefficient being caused by chance, its level of significance, is given. For the purpose of analysis, the correlation matrix in Appendix I was divided into two matrices. Table 4-2 presents a correlation matrix for major variables used in the six focal hypotheses which gave direction to this research (see the relevant section in Chapter I for the statements of the hypotheses and the variables included). The remainder of the variables and their correlation coefficients form another correlation matrix presented in Table 4-3.

Correlations of Major Variables

Correlational analysis of 94 arrays of data resulting from the sample detected a +.22 correlation between span of supervision and expressed initiation of structure, a correlation that was significant at 5% level. The positive sign of coefficient suggests that the larger the span
<table>
<thead>
<tr>
<th>Level</th>
<th>Participation</th>
<th>Centralization</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low</td>
<td>Weak</td>
<td>Formal</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Hybrid</td>
</tr>
<tr>
<td>3</td>
<td>High</td>
<td>Strong</td>
<td>Informal</td>
</tr>
</tbody>
</table>

Table: Centralization, Participation, Structure
the more a manager was inclined to prescribe initiation of structure, and vice versa. A -.18 correlation coefficient for span and expressed consideration suggests a low but significant negative relationship between the two variables. Span had its strongest correlation with actual (perceived) initiation of structure indicated by employee. A relatively strong negative correlation of -.45 was highly significant at .0001 level, proposing that the wider the span the less initiation of structure was perceived by the employee. Another relatively strong negative correlation existed between span and actual (perceived) consideration. This correlation was also highly significant at .0001 level and suggested that the wider the span the less consideration was perceived by the employees. This study yielded no significant correlation between span and the two dimensions of centralization: personal participation and hierarchy of authority.

Expressed initiation of structure was found to be positively and significantly related to expressed consideration. The correlation coefficient of .69 was significant at .0001 level and led to the interpretation that the higher the expressed initiation of structure, the higher the consideration. Since these two dimensions were subscales of the same instrument and the subscales had proven to be independent in frequent testing, one may conclude that the peculiar setting of this study caused such a correlation. This issue will be further discussed in the next chapter. No significant
correlation existed between expressed initiation of structure and actual (perceived) initiation of structure, actual (perceived) consideration, or the two dimensions of centralization.

The analysis did not detect any significant correlation between expressed consideration, on one hand, and perceived initiation of structure, perceived consideration, or personal participation, on the other hand. Expressed consideration had a -.23 correlation with hierarchy of authority as a measure of centralization, and the coefficient of correlation was significant at .10 level. This negative correlation suggests that the higher the perceived hierarchy of authority the higher the expressed consideration by the manager.11

Four major variables in the Employee Questionnaire were perceived initiation of structure, perceived consideration, personal participation, and hierarchy of authority. The first two variables were commonly used in many leadership studies, while the latter two variables represented two dimensions of centralization. All four variables were utilized to measure the directiveness of leadership style. Perceived initiation of structure and perceived consideration

11To clarify the nature of this correlation, the reader may find it helpful to refer to Appendix B for the scoring formats of the two scales.
showed a strong positive correlation of .68, a coefficient that was highly significant at .0001 level. These variables represent two dimensions of the same subscale in the Employee Questionnaire, and correspond to respective variables in the Supervisor Opinion Questionnaire. As noted before in this analysis, the two variables in the latter questionnaire also showed a strong positive correlation of .69 which was significant at .0001 level. The strength, significance, and, especially, proximity of the two correlations in both questionnaires is astonishing. The close proximity of the two coefficients of correlation not only depicts the reality of the estimated correlation, but also its accuracy. As noted before, since the two variables represent two independent subscales of the same scale, their correlation could be due to the particular situational characteristics which prevailed in this research. These characteristics are discussed in the next chapter. Perceived initiation of structure was not significantly correlated with personal participation, but it had a significant relationship with hierarchy of authority. The correlation coefficient of .43, which was significant at .0001 level, revealed that an increase in perceived hierarchy of authority was accompanied by an increase in perceived initiation of structure.

Perceived consideration was not found to be significantly correlated to personal participation as a dimen-
sion of centralization. However, the research detected a statistically significant correlation of .35 between perceived consideration and hierarchy of authority as the other measure of centralization. This correlation, which was significant at .0001 level, indicated that an increase in perception of hierarchy of authority was associated with an increase in perceived consideration. Two measures of centralization, hierarchy of authority and personal participation, had a relatively low positive correlation of .19. This coefficient was statistically significant at .10 level but not at .05. The statistical significance of this coefficient was relatively lower than that of other detected correlations.

Correlations Between Major Variables and Classification Variables

Correlations between pairs of variables composed of a major variable and a classification variable are presented in this segment of the chapter. The classification variables considered in this presentation include only the ones with a continuous nature. The nature of correlation and regression analysis restricts the researcher to the utilization of the data obtained from continuous scales. Due to this restriction, three discrete variables were separated

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12 Refer to the discussion on limitations of the correlation and regression analysis at the beginning of the chapter.
from other classification variables and will be discussed exclusively in the next part of this analysis. These three excluded variables were manager's sex, employee's sex, and employee's full-time/part-time employment status.

Table 4-3 presents a matrix of correlation coefficients for pairs of variables composed of a major and a classification variable. The major variables considered are the variables included in the six focal hypotheses of the research, with the exception of span of supervision. These variables identify the columns of the matrix. Classification variables, which identify the rows in the matrix, were additional variables that were incorporated in the questionnaires for the purpose of acquiring some demographic information on the sample. The additional data collected provided for the analysis and interpretation of associations supplementary to the examination of core relationships which formed the focal intention of this research. A brief investigation of the correlations presented in Table 4-3 provides further insight into the nature of associations. However, the analysis presented in this part is considered peripheral; therefore, subject to less attention.

The manager's age was positively and significantly related to both expressed initiation of structure and expressed consideration. The correlation coefficients were .49 and .66, respectively, both significant at a .001 level.
<table>
<thead>
<tr>
<th>Centralization</th>
<th>Personal Participation</th>
<th>Actual (Perceived) Consideration</th>
<th>Initiation of Structure</th>
<th>Expressed Consideration</th>
<th>Expressed Initiation of Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F.</strong></td>
<td><strong>J.</strong></td>
<td><strong>F.</strong></td>
<td><strong>J.</strong></td>
<td><strong>F.</strong></td>
<td><strong>J.</strong></td>
</tr>
<tr>
<td>Manager's (or their immediate) Length of Experience (in Years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 5</td>
<td>6 to 10</td>
<td>11 to 15</td>
<td>16 to 20</td>
<td>21 to 25</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation Coefficient**: The correlation coefficient indicates the strength and direction of the relationship between two variables. It ranges from -1 to +1, where:
- A value close to +1 indicates a strong positive correlation (as one variable increases, the other also increases).
- A value close to -1 indicates a strong negative correlation (as one variable increases, the other decreases).
- A value close to 0 indicates no correlation (the variables are independent of each other).
Although older managers expressed both higher initiation of structure and higher consideration, these traits were not consistently perceived by employees. This is reflected in the fact that no significant correlation was detected between manager's age and actual (perceived) initiation of structure or actual (perceived) consideration. The manager's age was neither significantly correlated to any of the two measures of centralization.

The managers who worked in their present jobs for a longer period expressed both less initiation of structure and less consideration. The corresponding correlation coefficients of -.20 and -.29 were both statistically significant at .06 level. On the contrary, these managers were perceived to exercise more initiation of structure \( (r = .24) \) and more consideration \( (r = .18) \). The first coefficient was significant at .05 and the latter at (.10). The manager's experience in the present job had no statistically significant relationship to either dimensions of centralization. The manager's work experience in other jobs was not significantly correlated to his/her expressed initiation of structure or consideration, but had positive correlation to perceived initiation of structure \( (r = .34) \) and consideration \( (r = .25) \). The correlation coefficients were both statistically significant, the former at .001 level and the latter at .05 level. No significant correlation was detected between the manager's
other work experience and either variables associated with centralization.

The analysis of the data revealed no "major" correlation between employee's age and any of the core variables. The only statistically significant correlations were found to be between this variable and expressed consideration (low r = .17 was significant at .10 level), actual initiation of structure and actual consideration (both r's = .22 significant at .05 level). The employee's time spent in the job had a correlation of -.23 with expressed consideration, a correlation significant at .05 level. No other statistically significant correlation existed between the employee's experience in the job and any of the major leadership variables.

The previous analysis excluded three discrete variables used in the study, i.e., manager sex, employee sex, and employee full-time/part-time status. The following is a brief discussion on the nature of the associations of these variables.

Discrete Classification Variables and Their Relationships to Other Variables.

The discrete nature of the data gathered on manager sex, employee sex, and employee full-time/part-time status did not allow a correlational analysis between any of these variables and any other variable. However, this fact
did not rule out the possibility that a classification of the data to various categories of each discrete variable could lead to the detection of better correlations between variables within each category. In fact, when on the basis of employee sex, the existing data was divided into two groups, the size of the coefficient of determination for the regression between perceived initiation of structure and span in the male group doubled (compared to the size of the similar coefficient when no sex classification was used).  

Of the three discrete variables mentioned, the employee sex was proven to be the most appropriate basis for classification of the original data. The manager sex did not provide a good basis for categorizing the data since there was only one female manager in the sample. Neither could the basis of employment, full-time or part-time status, be effectively used for classifying the data. The reports on the regressions on classified data are presented in the next section of this analysis. Further discussions on such classifications will be presented within the framework of each independent regression model. These regression models were developed from the major relationships presented in the six focal hypotheses of the research. The following section provides further insight into the nature of these associa-

13 For further information refer to the analysis on the first two relationships in the next section.
Further Analysis of Local Associations

The earlier analysis of correlation coefficients, extracted from the correlation matrix, explained the nature of associations between specific variables; i.e., it determined the strength and the direction of associations. However, further clarification of the nature of these associations could be achieved by examining the scatter diagrams and the results of regression analysis. The following section presents more in-depth exploration into six focal relationships between the variables under study. The section begins with the examination of the scatter diagrams, fitted regression lines, and the respective regression models for the two significant relationships found during the previous correlational analysis. Further improvements on each regression model are also discussed. A classification of the original data based on the employee sex led to better statistical predictions. The improved results are provided and discussed briefly. The final section of this part of the analysis presents the scatter diagrams for the non-significant correlations. This provision aids the reader to visually verify the lack of linear relationships between corresponding variables.

Relationship Between Actual (Perceived) Initiation of Structure and Span of Supervision
Figure 4-1 presents a scatter diagram for the span of supervision and the perceived initiation of structure. This diagram gives a visual presentation of the dispersion of the data for the two variables. The horizontal axis measures the values of the span, ranging from 3 to 24, and the vertical axis represents a scale which measures the values corresponding to actual (perceived) initiation of structure. The distribution of the data points on the diagram reconfirms a negative correlation between the two variables. As the span increases, the values move from the left to the right on the horizontal axis, the corresponding values for the actual (perceived) initiation of structure decrease, i.e., more concentration of the data at the lower portion of the diagram occurs. Figure 4-2 depicts a fitted regression line which represents the variation of the data. A mathematical estimation of the interception and the slope of this line is provided in Table 4-1 along with other results of the regression analysis between the two variables. The coefficient determination of .21 was statistically significant at .0001 level.

As mentioned before, a classification of the original data on the basis of employee sex proved to improve the regression results. Figure 4-3 presents the scatter diagram showing the association of the two variables for male employees. The reader could visually verify a clearer
Figure 4.4
Scatter Diagram for Span of Supervision and Actual Initiation of Structure
Table 4.4

Results of the Regression between Actual Initiation of Structure and Mean of Supervision

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>1</td>
<td>167.389245</td>
<td>167.389245</td>
<td>20.19</td>
<td>0.0001</td>
</tr>
<tr>
<td>Residual</td>
<td>49</td>
<td>15.44079551</td>
<td>0.31460145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>182.8300408</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter Estimate</th>
<th>Std. Error</th>
<th>t Value</th>
<th>df</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.615939</td>
<td>0.29722</td>
<td>50</td>
<td>0.0001</td>
</tr>
<tr>
<td>Y</td>
<td>0.9814427</td>
<td>0.23003</td>
<td>49</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

* Y = Actual 'Perceived' Initiation of Structure

** Y = Mean of Supervision
Figure 4-3
Scatter Diagram for Span of Supervision and Actual Initiation of Structure (Male Employees)
negative correlation between the variables, compared to the
one verified in Figure 4-1. The corresponding fitted re-
gression line is presented in Figure 4-4. Table 4-5 pre-
sents the results of the regression analysis respectively.
The coefficient of determination improved to .47, from .21
for non-classified data, and was statistically significant
at .0001 level. In the group of female employees, the two
variables of span and actual (perceived) initiation of struc-
ture did not show a similar significant correlation. Figure
4-5 represents a scatter diagram for the two variables in
this group. The corresponding fitted regression line is
presented in Figure 4-6. However, the analysis of statist-
tics in Table 4-6 showed that the low coefficient of deter-
mination of .11 was still statistically significant.

Relationship Between Actual (Perceived) Consideration and
Span of Supervision

The second significant relationship, among focal
relationships, was found between actual (perceived) consid-
eration and span of supervision. Figure 4-7 depicts the
dispersion of actual data points. The reader can visually
verify a negative relationship between the two variables. A
fitted regression line, presented in Figure 4-8, helps the
reader to visualize a negative linear relationship between

\[ r = -0.47 \]

The corresponding coefficient of correlation for this
group is \( \sqrt{.47} = -.69 \), presenting a more significant re-
relationship than the one suggested by the coefficient for
non-classified data.
Figure 4-4

Fitted Regression Line for Span of Supervision and Actual Initiation of Structure (Male Employees)
Table 4-5

Results of the Regression Between Actual Initiation of Structure and Span of Supervision for Male Employees

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>P &gt; F</th>
<th>R-Square</th>
<th>C.V.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>1</td>
<td>145,656,915.82</td>
<td>145,656,915.82</td>
<td>22.31</td>
<td>0.0501</td>
<td>9.471673</td>
<td>13.6415</td>
</tr>
<tr>
<td>Corrected Total</td>
<td>99</td>
<td>145,656,915.82</td>
<td>22.31</td>
<td>0.0501</td>
<td>9.471673</td>
<td>13.6415</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Type I SS</th>
<th>F Value</th>
<th>P &gt; F</th>
<th>Type IV SS</th>
<th>F Value</th>
<th>P &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>1</td>
<td>145,656,915.82</td>
<td>22.31</td>
<td>0.0501</td>
<td>145,656,915.82</td>
<td>22.31</td>
<td>0.0501</td>
</tr>
</tbody>
</table>

** Parameters **

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Std. Error of Estimate</th>
<th>Std. Error of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept S1</td>
<td>9.144812078</td>
<td>39.5</td>
<td>39.5</td>
</tr>
<tr>
<td>Intercept S1</td>
<td>-3.66176115</td>
<td>39.5</td>
<td>39.5</td>
</tr>
</tbody>
</table>

* LI = Actual Initiation of Structure

** S1 = Span of Supervision
### Actual Initiation of Structure

**Span of Supervision**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: The diagram shows the actual initiation of structure (female employees) for span of supervision and management.*

*Figure 4-6*
Figure 1-
Fitted Regression Line for Span of Supervision and Actual Initiation of Structure (Female Employees)
Table 4-6

Results of the Regression Between Actual Initiation of Structure and Span of Supervision for Female Employees

<table>
<thead>
<tr>
<th>SLUMCE</th>
<th>DF</th>
<th>SUM OF SQUARES</th>
<th>MS</th>
<th>F VALUE</th>
<th>PR &gt; F</th>
<th>R-SQUARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCHL</td>
<td>1</td>
<td>275.676.898878</td>
<td>275.676.898878</td>
<td>7.88</td>
<td>0.0045</td>
<td>0.119821</td>
</tr>
<tr>
<td>EHNL</td>
<td>1</td>
<td>226.40104.9913</td>
<td>15.14649913</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLUMCE TOTAL</td>
<td>2</td>
<td>596.176.8791</td>
<td>298.088.93955</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SLUMCE</th>
<th>DF</th>
<th>TYPE IV SS</th>
<th>P VALUE</th>
<th>MS &gt; P</th>
<th>DF</th>
<th>TYPE IV SS</th>
<th>P VALUE</th>
<th>MS &gt; P</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>1</td>
<td>275.676.898878</td>
<td>7.88</td>
<td>0.0045</td>
<td>1</td>
<td>275.676.898878</td>
<td>7.88</td>
<td>0.0045</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>ESTIMATE</th>
<th>1 FOR K-0</th>
<th>IN &gt; 0.1</th>
<th>STD ERROR</th>
<th>ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERCEPT</td>
<td>47.7107707</td>
<td>23.95</td>
<td>0.0081</td>
<td>1.40779492</td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>-0.35315978</td>
<td>-2.45</td>
<td>0.1966</td>
<td>0.16763984</td>
<td></td>
</tr>
</tbody>
</table>

* L1A = Actual Initiation of Structure

** S1 = Span of Supervision
Figure 4-7
Scatter Diagram for Span of Supervision and Actual Consideration
Actual Consideration

Figure 6-8

Plotted regression line for span of supervision
Figure L-3
Fitted regression line for span of supervision and actual consideration.

Actual Consideration

1 2 3 4 5 6 7 8 9 10 11 12 13 14

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Actual Consideration
the two variables, and corresponds to the data graphed in Figure 4-7. The fitted line suggests that as the value of span increased, moving from left to right on the horizontal axis, the expressed value of actual consideration decreased, the line moved downward. Table 4-7 summarizes the statistics for the regression analysis. The coefficient of determination of .14, corresponding to the correlation coefficient of -.37 reviewed earlier, has a high statistical significance (significant at .0009 level). Estimates for the interception and the slope of the regression line are provided for a mathematical expression of the relationship.

A classification of the data by employee sex proved to improve the predicted relationship between span and actual consideration. The visual examination of the scatter diagram for the male portion of the sample, Figure 4-9, leads to a clearer distinction of the negative correlation compared to the one for unclassified data. Figure 4-10, fitted regression line, facilitates the verification of the regression line corresponding to the data points on the diagram in Figure 4-9. The significant improvement of estimation, caused by classification of the data, is shown by improved $R^2 = .36$, from .14 for unclassified data, significant at .0009 level (see Table 4-8). The values of the interception and the slope of the regression line are also provided in Table 4-8. These values allow for the relationship to be expressed in a
Table 1-7

Results of the Regression Between Actual Consideration and Span of Supervision

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>P-value</th>
<th>Std Dev</th>
<th>R</th>
<th>R Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>72.55436667</td>
<td>14.97</td>
<td>0.0042</td>
<td>9.11943</td>
<td>17.500</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>25</td>
<td>16.22331667</td>
<td>0.64973333</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Corrected Total</td>
<td>26</td>
<td>88.77768333</td>
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<td>Regression</td>
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<td>72.55436667</td>
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<td>14.97</td>
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<td>Residual</td>
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<td>Corrected Total</td>
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</table>

* V = Actual (Perceived) Consideration

** X = Span of Supervision
Figure 4.6
Scatter Diagram for Span of Supervision and Actual Consideration (Male Employees)
Figure 5-1

Fitted regression line for Span of Supervision and Actual Consideration (Sale Employees)


**Table A-8**

Results of the Regression Between Actual Consideration and Span of Supervision for Male Employees

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<tr>
<th>Source</th>
<th>DF</th>
<th>Type III SS</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
<th>R-Square</th>
<th>C.V.</th>
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<tbody>
<tr>
<td>Model</td>
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<td>493.43124745</td>
<td>493.43124745</td>
<td>14.11</td>
<td>0.0009</td>
<td>0.360394</td>
<td>10.9618</td>
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<tr>
<td>Error</td>
<td>24</td>
<td>1355.837941</td>
<td>56.49536583</td>
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<td>Corr. Total</td>
<td>26</td>
<td>1849.147186</td>
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<th>Type IV SS</th>
<th>F Value</th>
<th>Pr &gt; F</th>
<th>R-Square</th>
<th>C.V.</th>
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<td>Sp1</td>
<td>1</td>
<td>493.43124745</td>
<td>14.11</td>
<td>0.0009</td>
<td>0.360394</td>
<td>10.9618</td>
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<th>Parameter</th>
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<th>Std Error of Estimate</th>
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<td>Intercept</td>
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<td>16.44</td>
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<tr>
<td>Sp1</td>
<td>-2.550689759</td>
<td>7.144459493</td>
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</table>

* LPA = Actual Consideration

** Sp1 = Span of Supervision
mathematical model. In the group of female employees, the association between span and actual (perceived) consideration was very low but still statistically significant. Figures 4-11 and 4-12 present the scatter diagram and the fitted regression lines, respectively. The $R^2$ statistic for the regression was .06, reconfirming a very low level of association between variables, but was still statistically significant, at .03 level (see Table 4-9 for the summary of regression statistics).

From the preceding discussion of the correlation coefficients, the reader will remember that only two of the six focal relationships studied led to statistically significant relationships. The analysis of the remaining four relationships is the subject of the following section.

Non-significant Relationships

As noted before, four of the six focal relationships studied led to no statistically significant indication of any association. Although the presentation of correlation coefficients and the corresponding significance levels is usually sufficient to conclude on non-existence of significant associations, such conclusions could be reconfirmed by examining the corresponding scatter diagrams. Figures 4-13 to 4-16 represent the scatter diagrams for the four major non-significant relationships. The common denominator among these diagrams is the absence of a linear relationship, a
<table>
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</thead>
<tbody>
<tr>
<td><strong>Span of Supervision</strong></td>
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</tbody>
</table>

*Actual Consideration (Example Employees)*

*Better Diagram for Span of Supervision*
Figure 4-10

Fitted Regression Line for Span of Supervision and Actual Consideration (Female Employees)
Table 4-9

Results of the Regression Between Actual Consideration and Span of Supervision for Female Employees

<table>
<thead>
<tr>
<th></th>
<th>SUM OF SQUARES</th>
<th>MEAN SQUARE</th>
<th>P VALUE</th>
<th>DF &gt; F</th>
<th>R-SQUARE</th>
<th>C.V.</th>
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</thead>
<tbody>
<tr>
<td>SLAVE</td>
<td>157.944118575</td>
<td>157.944118575</td>
<td>4.64</td>
<td>9.0350</td>
<td>0.7450</td>
<td>10.6435</td>
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<td>MOLL</td>
<td>77.977391647</td>
<td>41.1197666</td>
<td>1</td>
<td>4.9771</td>
<td>0.2500</td>
<td>28.7429</td>
</tr>
<tr>
<td>TOTAL</td>
<td>232.658915228</td>
<td>41.1197666</td>
<td>1</td>
<td>4.9771</td>
<td>0.2500</td>
<td>28.7429</td>
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<table>
<thead>
<tr>
<th></th>
<th>TYPE I S5</th>
<th>P VALUE</th>
<th>DF &gt; F</th>
<th>TYPE IV S5</th>
<th>P VALUE</th>
<th>DF &gt; F</th>
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</thead>
<tbody>
<tr>
<td>SLAVE</td>
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<td>4.64</td>
<td>0.0350</td>
<td>1</td>
<td>192.9910505</td>
<td>4.64</td>
</tr>
</tbody>
</table>

* LLA = Actual Consideration

** S1 = Span of Supervision
Figure 4-13
Scatter Diagram for Actual Initiation of Structure and Expressed Initiation of Structure
Figure 4-14
Scatter Diagram for Actual Consideration and Expressed Consideration
### Hierarchy of Authority

**Span of Supervision**

<table>
<thead>
<tr>
<th>10</th>
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<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
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</table>

*Figure 4-16: Scatter Diagram for Span of Supervision and Hierarchy of Authority*
fact that could be verified by visual examination of diagrams. The lack of significant correlation coefficients eliminates the need for the formation of regression models.

Summary of the Statistical Results

The analysis of the data of this study led to the following findings:

1. There was a negative relationship between the span and actual (perceived) initiation of structure. This relationship was found to be stronger among male employees and weaker among female workers.

2. A similar, but slightly weaker, negative relationship existed between span and actual (perceived) consideration. The negative relationship was found to be stronger for the subsample of male employees and very weak among female employees.

3. The remaining four focal relationships were not proven to be significant. In other words, neither "actual" initiation of structure nor "actual" consideration were related to their corresponding "expressed" variables. No relationship was detected between the span of supervision and any of the dimensions of centralization.

4. Some significant peripheral correlations existed between some major and classification variables. These relationships were discussed in more detail in the relevant section of this analysis.
Summary of Results by Hypothesis

The findings of the study were used to test the six hypotheses stated in Chapter I. The following is the summary of the results by these hypotheses. The discussion on each hypothesis includes statements of "null" and "alternative" hypotheses followed by a conclusion of the testing procedure.

HYPOTHESIS I:

H₀: There is no relationship between "span of supervision" (S) and "personal participation" (Cl).
A : There is some relationship between S and Cl.
Conclusion: The null hypothesis of no relationship between S and Cl was not rejected.

HYPOTHESIS II:

H₀: There is no relationship between "span of supervision" (S) and "hierarchy of authority" (C2).
A : There is some relationship between S and C2.
Conclusion: The null hypothesis of no relationship between S and C2 was not rejected.

HYPOTHESIS III:

H₀: There is no relationship between "span of supervision" (S) and "actual initiation of structure" (I1A).
A : There is a relationship between S and I1A.
Conclusion: The null hypothesis of no relationship between S and I1A was rejected with .0001 probability of rejecting a true null hypothesis.
HYPOTHESIS IV:

H₀: There is no relationship between "span of supervision" (S) and "actual consideration" (I₂A).
A : There is a relationship between S and I₂A.
Conclusion: The null hypothesis of no relationship between S and I₂A was rejected with .0002 probability of rejecting a true null hypothesis.

HYPOTHESIS V:

H₀: There is no relationship between "actual initiation of structure" (I₁A) and the leader's "expressed" belief about initiation of structure (I₁F).
A : There is a relationship between I₁A and I₁F.
Conclusion: The null hypothesis of no relationship was not rejected.

HYPOTHESIS VI:

H₀: There is no relationship between "actual consideration" (I₂A) and the leader's "expressed" belief about consideration (L₂F).
A : There is a relationship between I₂A and L₂F.
Conclusion: The null hypothesis of no relationship between I₂A and L₂F was not rejected.
CHAPTER V

INTERPRETATION OF THE RESULTS, CONCLUSIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

The results of the research reported in Chapter IV are interpreted and discussed in this chapter. The chapter begins with a brief summary of the study, and then the relationship between span of supervision and various components of the directiveness of leadership style are examined. Next, a discussion on supplementary relationships discovered in the research is presented. A "summary and conclusion" section follows, wherein some possibilities of practical applications of the findings are explored. The final part of the chapter is devoted to suggestions for further research.

Summary of the Study

The primary purpose of this study was to examine the relationship between "span of supervision" and "directiveness of leadership style." The latter variable was measured along the four dimensions of initiation of structure, consideration, participation in decision making, and hierarchy of authority. To measure the relationships, an "Employee Questionnaire" was completed by 94 restaurant employees of various work-group sizes. The manager of each work group also completed a questionnaire which provided information on his beliefs about what comprised an appropriate leadership style.
Correlation and regression analysis were used to detect associations between the variables under study. The findings of the study indicated highly significant correlations between the span and the first two dimensions of leadership directiveness, i.e., actual initiation of structure and actual consideration. The remaining two dimensions were not significantly correlated to span. A more detailed presentation of the research findings is included in Chapter IV.

Relationship Between Span of Supervision and the Directiveness of Leadership Style

The interpretations on the relationships of span to the four dimensions of the directiveness of leadership style are made in this part. The first two measures of leadership directiveness, i.e., initiation of structure and consideration, are the most conventionally used measures of leadership since the Ohio State studies. The discussion on the relationships of each variable to span includes an examination of the association between actual and expressed (belief) measurements for that variable. The relationship between initiation of structure and consideration are then discussed. The last two measures of leadership directiveness, personal participation in decision making and hierarchy of authority, were two dimensions of a centralization scale developed by

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1 For a definition of terms and measurement scales see: Stogdill, Manual for the Leader Behavior Description Questionnaire - Form XII, pp. 8-11.
Hage and Aiken. The associations between span and these centralization variables are investigated in the latter part of this section.

Interpretation of the Relationship Between Span and Initiation of Structure

The findings of the study detected a relatively strong negative correlation between span and actual initiation of structure. The correlation coefficient of -.46 was the largest, in absolute terms, among the coefficients corresponding to major relationships, and indicated that a wider span was associated with less initiation of structure. The high level of statistical significance of the coefficient (P=.0001) showed that there was only a .0001 probability of discovering the association by chance.

In the interpretation of the negative correlation between span and actual initiation of structure, two issues deserve attention. First, as noted in the previous discussion on methodology in Chapter III, the relationship between span and initiation of structure could be affected by the leader's personal inclinations to practice a given leadership style. The reader will also remember that the research design pro-

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2Hage and Aiken, "Relationships of Centralization to Other Structural Properties", op. 78-79.
3See Table 4-7 for correlation coefficients for major associations.
4For a definition of variables, see the appropriate section in Chapter I.
vided for the elimination of the effect of this intervening variable by measuring the leader's "expressed" belief about "an appropriate" leadership style and by assessing the impact of this belief on his "actual" leadership behavior. A short reference to Table 4-2 reveals that this study found no significant correlation between "expressed" initiation of structure and "actual" initiation of structure. The absence of such a contaminating effect of the intervening variable could be considered as a positive phenomenon which reconfirms the accuracy and the significance of the detected correlation between span and actual initiation of structure.

The second issue that deserves attention in interpreting the span/actual-initiation-of-structure relationship concerns the measurement of actual initiation of structure. To measure this dimension of the "actual" behavior of the leader, the employees were asked to describe their "perception" of the leader's behavior. Since perception of actual behavior seldom perfectly matches the reality of these behaviors, the interpretation of the findings should be made with caution.\(^5\) Many personality variables, as well as situational factors, affect one's perception. One such a factor is sex. When used as a basis for dividing the sample into two groups of male employees and female employees, sex

\(^5\) This fact was noted as a limitation for the study in Chapter 1.
proved to have a significant impact on the relationship between actual initiation of structure, as perceived by the employees, and span of supervision. In the group of male employees, the correlation coefficient for the association between span and initiation was -.69, suggesting that as size of span increased, the leader was perceived as initiating less structure. The absolute value of the coefficients rose .23 points as a result of the classification (from -.46 to -.69), and the new coefficient, for the group of male employees, was statistically significant at .0001 level. For the group of female employees, the association between span and actual (perceived) initiation of structure was less (r=-.33 compared to r=-.46 for non-classified data), but still statistically significant.

The discovery of a negative correlation between span of supervision and initiation of structure reconfirms the evidence provided by some earlier researchers and contradicts the work of some others. This finding is consistent with the proposition made by House and Miner that supervisors with a short span tend to supervise more closely. Nevertheless, the researcher does not agree with these authors' advocacy of a broad span of control. He believes that the

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discovery of a negative correlation does not necessarily support the notion that, given the opportunity, the supervisor as a power holder tends to exercise his/her authority over his/her subordinates. In fact, the negative correlation could be due to situational factors, an issue that will be further discussed later in the chapter. The evidence provided in this research could be interpreted as contrary to that provided by Hemphill, who believes the leader of a larger group tends to exert a greater degree of impersonal direction connected with firmness and impersonality in the enforcement of rules and regulations - i.e., a wider span is correlated to higher task orientation. The conflicting conclusions could be the result of the differences in methodology and situational context.

Interpretation of the Results Between Span of Supervision and Consideration

The analysis of the study presented in Chapter IV revealed a strong negative relationship between span and actual (perceived) consideration. The correlation coefficient

7The reader is reminded of the beginning discussion in Chapter I which proposed a triangular relationship between organizational structure, power, and leadership.

8Hemphill, "Relationship Between Size of the Span and the behavior of 'Superior Leaders'", pp. 11-12.

9For a definition of variables refer to Chapter 1.
of -.37 indicated that as the size of span increased less consideration, in the leaders behavior, was perceived by the employees, while when the span narrowed the supervisor was seen as more considerate. There was a .0002 probability that the detection of this relationship was due to chance.\(^\text{\textcopyright 10}\)

As it was the case for the span/initiation of structure association, the interpretation on the span/consideration relationship should be made only with consideration of the effects of two intervening variables: supervisor's leadership beliefs and employee's perceptual limitations. The discussion on the limitations of the study in Chapter I led to the conclusion that the leader's "belief" on what comprised the appropriate leadership behavior could influence his "actual" behavior. To deal with this "belief" effect, the research methodology was designed to allow for measurement and analysis of the effect. In the analysis of the research, Chapter IV, it was noted that no significant relationship existed between the leader's expressed consideration (his belief) and his actual behavior (as perceived by the followers). The absence of a significant "belief" effect reconfirms the significance as well as the accuracy of the estimated relationship between span and actual consideration.

The second intervening variable which could interfere

\(^{10}\)Refer to Table 4-2 or Appendix I for correlation coefficients of association between major variables.
in the measurement of the span/consideration relationship was "perceptual" limitations of the employee. Individuals' perceptions are commonly affected by a variety of factors. One such factor is sex. This study found that the sex of employees had a major impact on how they "perceived" the actual behavior of the leader along the consideration dimension. To study the effect of employee sex on the relationship between actual (perceived) consideration and span of supervision, the employee responses were divided into two groups of male and female respondents. For the group of male respondents, the coefficient of correlation improved from -.37, for non-classified respondents, to -.60, with a high level of statistical significance. For the group of female respondents, the association was considerably lower, with a correlation coefficient of -.24.12

The negative correlation between span and actual consideration suggests that in a group with a wider span, the leader is perceived as less considerate of the feelings of those under him.13 This suggestion is in line with Hemphill's proposition that the leaders of larger groups tend to be

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11 The coefficient of correlation for the male respondents was $\sqrt{.36} = -.60$. See Table 4-8 for relevant statistics.
12 $r = \sqrt{.66} = -.24$. See Table 4-9 for relevant statistics.
13 For more specific definition of consideration see: Stogdill, Manual for Leader Behavior Description Questionnaire - Form XII, p. 3.
less considerate of the individual member and tend to be more impersonal, firm, and impartial in enforcement of rules and regulations.\textsuperscript{14}

Interpretation of the Relationship between Initiation of Structure and Consideration

An important finding of this study was that the two leadership variables of initiation of structure and consideration were highly correlated, and this correlation was detected in both expressed (belief) and actual (perceived) measurements of the two variables. A positive correlation between the variables existed for both "expressed" measurements ($r = .49$) and "actual" ($r = .68$), and corresponding coefficients were statistically significant at .001 level. Such a positive correlation proposes that, when either expressed or actual initiation of structure was high, the consideration also measured high along the respective measurement. Similarly, a low initiation of structure was associated with a low consideration.

Two explanations could be offered to justify the finding of such positive relationships. The first explanation seeks a methodological answer while the second one provides a situational reason for their existence. To explain the findings in methodological terms, the reader is reminded that the variables of initiation of structure and consideration were measured along two subscales of a questionnaire

\textsuperscript{14}Hemphill, op. cit., p. 19.
used in The Ohio State Studies. The high interdependence of the two subscales, represented by high correlation between the two measured variables, could be interpreted as a weakness of the questionnaire design. However, this interpretation is not valid since the questionnaire has been subject to frequent testing and has proved to be highly reliable and valid. Furthermore, the mere proximity of the correlation coefficients for expressed measurements ($r = .69$) and actual measurements ($r = .68$) of initiation of structure and consideration, respectively, indicates not only the reality of the relationship but also the accuracy of their measurement.

An alternative explanation for the positive relationship between initiation of structure and consideration proposes the cause of the association to be in the particular situational context which exists in the restaurant. Restaurant managers have to deal the frequent problem of low skilled, uneducated, and apathetic workers. One specialist sees labor as a major problem for the management of food service operations. Management reacts to the labor problem

\[15\text{For information on the reliability and validity of this questionnaire see Stogdill, Manual for Leader Behavior Description Questionnaire - Form XII, pu. 8-11.}\]

\[16\text{If the relationships were due to the faulty scale construction, as the first solution proposes, the results would have been distorted, and most probably led to different r's. High levels of statistical significance of r's also indicate the accuracy of their estimates.}\]

\[17\text{Zaccarelli, "Inspiring Good Management", p. 86.}\]
by emphasizing coordination and issuing directions. Strict coordination of activities is very critical for the efficient management of restaurants and probably even sought by employees:

Without active intervention by management ... always... people (employees) would be passive .... They must, therefore, be persuaded, rewarded, 'punished', and controlled. Their activities must be directed... and this is manager’s task. 18

If close supervision and coordination of employees activities are so important for "effective" management of a restaurant, then a "benevolent autocrat" would be both effective and highly regarded by employees. 19 However, coordination and close supervision become extremely difficult as the span of supervision increases. This difficulty has been witnessed by other researchers. In his famous study in the restaurant industry, Whyte noted that, as the size of the organization increased, there was increasing difficulty in coordinating activities. 20

The line of facts presented above can help to explain the positive relationship between initiation of structure and consideration. That is, when the management was

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18 Zacarelli, op. cit., p. 86.

19 The term "benevolent autocracy" describes a highly directive leadership style (high initiation of structure) combined with concern for employees (consideration). For the original use of the term see: Hicks, The Management of Organizations, pp. 452-453.

"effective", a benevolent autocrat with a small span of supervision, both initiation of structure and consideration were measured high. On the contrary, when management performed poorly, due to either a large span or inappropriate leadership style, low initiation of structure (little direction) accompanied low consideration (little concern for employees). The discussion on the "effectiveness" of restaurant management is beyond the scope of this study and the presented discussion on causations is only used to provide an alternative explanation for the positive relationship between the variables under consideration.

Summary of the Relationships of Span to Initiation of Structure and Consideration

In brief, the analysis of the data gathered from the employees of 9 fast food restaurants led to the conclusion that in a larger group (wider span) the behavior of the leader was perceived as less structure initiating and less considerate of employees feelings. Stronger negative relationships were found in the analysis of data from male employees, while in the group of female employees the negative correlations were lower but still significant. The high levels of positive correlation between initiation of structure and consideration could be explained in terms of situational contexts in the restaurant environment. In other words, the workers' dependency on managers' direction and coordination prescribed a "benevolent autocratic" leadership
style; therefore, this situation caused an effective manager to score high in both initiation of structure and consideration, while a poor supervisor scored low in the two variables.

The above explanation is based on two premises. The first assumption is that as span increased the effectiveness of leadership decreased. The second assumption is a derivative of the first one and states that there should have been a point after which the marginal utility of increasing the size of span sharply declined; i.e., there was a limit to how large a restaurant could be. The latter assumption implies that there existed an "optimum" span, or range of span, for fast food service operations. The notion of the existence of an "optimum span," or work group size, in the restaurant is in line with the conclusion derived by Woodward and Hickson, et al., that in some industries successful organizations did utilize a span close to the median of their production group type. Visual examinations of Figure 4-1 and 4-3 reveal that actual initiation of structure began a sharp drop beyond a span of 18 to 20. A similar trend can be distinguished in

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21 This assumption is based on two propositions. The first one was made by Whyte, stating that, as the size of the work group increases, coordination becomes difficult. The second proposition by Zaccarelli stated that a high level of coordination was necessary for effective management of food service operations. For more elaboration on propositions refer to the latter part of the preceding section.

Figure 4-7 and 4-9 where actual consideration sharply declines beyond the span of 18 to 20. The determination of an optimum span was not the intention of this study and the above mentioned analysis was merely presented to further explore the nature of the relationship between the variables under consideration.

In addition to initiation of structure and consideration, two other factors were used to represent the directiveness of leadership style. The following discussion examines the relationship between the span and these two variables which were associated to centralization.

Interpretation of the Relationship Between Span and Centralization Variables

The findings of this study indicated no significant relationship between span of supervision and either measurements of centralization. However, personal participation in decision making, the first measure of centralization, is one of the factors according to Litterer which are influenced by span of supervision. Nevertheless, the findings of previous researchers do not provide a consistent answer to the nature of the relationship. Healv studied the span of control in 574 organizations and concluded that executives with larger spans tended to use a more participative leadership style.

24 Healv, Executive Coordination and Control, p.
Contrary to Healy's conclusion, Heller and Vulk found that the sharing of decisions with subordinates was greatest when the leader had a narrow span of control. Conclusions of a research by Pennings were more in agreement with Heller and Vulk's findings but the results were hardly statistically significant. The inconsistency of the findings of previous research and the absence of a significant relationship in the findings of the present research and that of Pennings raise serious questions on Litterer's proposition that span and participation are associated.

The second measure of centralization used in this study was hierarchy of authority. House and Miner suggest that when span is narrow the supervisor tends to delegate less authority. This common conviction was not supported by the findings of this research. The findings of earlier research on the relationship are also inconsistent. The inconsistency of these findings and the lack of a significant relationship proposed by the present research cast doubts on the existence of a relationship between size of span and delegation of authority to subordinates.

27 House and Miner, op. cit., p. 455.
Summary of the Relationship Between Span and Centralization

Despite a common belief that a narrow span is associated with less delegation of authority, on the part of the leader, and less participation in decision making, on the part of the follower, no statistically significant relationship between span and the other two variables was found. The inability of this research to detect significant correlations together with the inconsistency of the findings of previous research makes the existence of such relationships doubtful.

The interpretations presented so far concerned the focal associations to this study. The following section includes brief interpretations of some supplementary relationships found as a result of the research.

Supplementary Relationships

Concise interpretations of some relationships between pairs of classification factors and leadership (major) variables are presented in this part. The interpretations are based on the information provided in Table 4-3.

1. The older managers "expressed" both more consideration of employees' feelings and more initiation of structure. However, these behavioral patterns were not reflected in their "actual" behavior as perceived by their employees. The age of the manager had no significant effect on his choice of a participative leadership style or on the delegation
of authority to the subordinates.

2. There was a slight tendency among managers who were in their present job for longer time to express less consideration and less initiation of structure. However, their employees perceived them as more considerate and initiating more structure.

3. Managers who had more "other work experience" were perceived by their employees to exert more initiation of structure and more consideration.

Summary and Conclusion

The analysis of the results of this study led to the following interpretations and conclusions:

1. As the span of supervision increased, the manager was perceived to initiate less structure (hypothesis III) and be less considerate of employees feelings (hypothesis IV).

2. The relationships expressed above in 1. were found to be more significant for male respondents. This finding suggested the existence of a "sex" effect in the employees perception of the leader's behavior.

3. The leaders who initiated a high degree of structure were also highly concerned with the employees feelings, while little direction accompanied little concern for the employees. The positive relationship between the two variables held for actual (perceived)
measurements of the behavior as well as the belief (expressed) measurements.

4. It was proposed that, due to the labor problem in the restaurant operations, the manager has to exert a high degree of coordination and direction on employees. However, coordination becomes difficult as the span widens. This chain of reasoning helps justifying the relationships discussed in 1, 2, and 3 above. That is, as the span increased, "effective" management became difficult; therefore, both initiation of structure and consideration suffered. In the contrary situation, when the span was narrow, the ideal combination of the two behavioral patterns became easier to achieve.

5. The proposition made in 4 implies that there might be an optimum span or range of spans in the restaurant. This study found that beyond the span of 16 to 20, there was a sharp decline in both initiation of structure and consideration. Although this finding could have implications for the structural design of these restaurants, prescriptions are reserved until future research reveals more about the effectiveness of the leadership in these restaurants.

6. The manager's actual leadership behavior, along the two dimensions of initiation of structure and consideration, seemed to be unaffected by his beliefs
about what comprised appropriate behaviors along the respective dimensions (hypothesis V and VI). For example, the older managers and the managers with less "other work experience" expressed more initiation of structure and more consideration. The findings suggest that these managers put their trust in "benevolent autocracy" as an effective leadership style, but they did not practice what they preached. There was a tendency among the more experienced managers to initiate more structure and to be considerate of their employees feelings.

7. Contrary to common convictions in the field, this study found no significant relationship between the size of span and personal participation of employees in decisions, or delegation of authority to the subordinates (hypothesis I and II).

Suggestions for Further Research

Fast-food service operations provide an excellent environment for field researchers with organizational behavior/theory orientation. These restaurants have many unique characteristics and many of these facets are relatively unexplored. The management and employees of these restaurants are very receptive of research activities, and it is not unreasonable for the researcher to expect a high response rate, as was the case in this study. The fast-food restaurants are
recommended by the author for a replication of this study to reexamine the validity of our findings, as well as for an expansion of the present research.

The author believes that the most important conclusions drawn from this study were the ones with possibility of practical application: 1) The suggestion of "benevolent autocracy" as an appropriate leadership style for fast-food restaurants, a finding that could have implications for the selection of managers; and 2) the proposition that there might be an "optimum" span on the basis of the findings that almost all significant dimensions of leadership behavior deteriorated beyond the span range of 18 to 20. Further study is needed to revalidate the underlying premises of the above conclusions. These assumptions are the negative correlation between span and leadership effectiveness, and the diminishing marginal utility of increasing span after an "optimum" point. For such reexamination the future research needs to be designed to measure the "effectiveness" of leadership.

The present study could also be expanded to include other variables which may have an impact on the relationships under consideration. One such variable is the level of education. Inclusion of this variable could provide for testing the argument that labor problem in the restaurant industry is due to lack of education. The future research can also investigate the possibilities of manager's behavior being influenced by his formal education. The future researcher could
explore the possibility of a "manager-sex" effect similar to the "employee-sex" effect found in this study. The research design could allow for such an exploration by increasing the number of managers, therefore the restaurants included in the sample.
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**BIBLIOGRAPHY**

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APPENDIX A
EMPLOYEE QUESTIONNAIRE:
SUBSCALES AND SCORING FORMATS
EMPLOYEE QUESTIONNAIRE

DIRECTIONS:

a. READ each item carefully.

b. THINK about how frequently your supervisor engages in the behavior described by the item.

c. DECIDE whether he/she (A) always, (B) often, (C) occasionally, (D) seldom, or (E) never acts as described by the item.

d. DRAW A CIRCLE around one of the five letters (A B C D E) following the item to show the answer you have selected.

   A = Always
   B = Often
   C = Occasionally
   D = Seldom
   E = Never

e. MARK your answer as shown in the example below.

Example: Often acts as described .................. A C D E
Example: Never acts as described .................. A C D E
Example: Occasionally acts as described .......... A C D E

INITIATION OF STRUCTURE SUBSCALE

1. Lets employee know what is expected of them ........ A P C D E
2. Encourages the use of set ways of doing things. A B C D E
3. Tries out his/her ideas in the group ............. A B C D E
4. Makes his/her attitudes clear to the group ...... A P C D E
5. Describes what shall be done and how it shall be done ............................................ A C D E
6. Assigns group members to particular tasks ...... A P C D E
7. Schedules the work to be done .................... A P C D E
8. Makes sure that his/her part in the group is understood by the employee ...................... A C D E
9. Keeps fixed quality of performance ............. A P C D E
10. Asks that employees follow rules and regula-
    tions .................................................. A P C D E

CONSIDERATION

1. Is friendly and easy to talk to .................. A P C D E
2. Does little things to make it pleasant to work here .............................. A C D E
3. Puts suggestions made by the group into operation A B C D E
4. Treats all employees as his/her equals............ A P C D E
5. Gives advanced notice of changes............... A F C D E
6.* Keeps to himself/herself............................ A P C D E
7. Looks out for personal welfare of employees... A P C D E
8. Is willing to make changes....................... A P C D E
9.* Refuses to explain his/her actions............. A P C D E
10.* Acts without consulting the group............. A P C D E

SCORING FORMAT: All items of the above subscales, with the exception of the marked items (*), are scored:

A B C D E
5 4 3 2 1

Starred items are scored in the reverse direction.

Source: R. M. Stogdill, Leader Behavior Description Questionnaire - Form XII, Ohio State University, 1953.

CENTRALIZATION: ACTUAL PARTICIPATION

DRAW A CIRCLE around one of the five letters (A B C D E) following the item to show the ANSWER you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

1. How frequently do you usually participate in the decision to hire new employees?.............
2. How frequently do you participate in the decision on the promotion of any of the employees?. A B C D E
3. How frequently do you participate in the decision on the adoption of new rules and policies? A B C D E
4. How frequently do you participate in the decision on the adoption of new programs (Sales Contests, etc.)?............................ A B C D E

SCORING FORMAT: Items of this subscale are scored:

A B C D E
5 4 3 2 1
CENTRALIZATION: HIERARCHY OF AUTHORITY

a. READ each of the following statements carefully.

b. Show your AGREEMENT with the statement by DRAWING A CIRCLE around:

(A) if you STRONGLY AGREE with the statement
(B) if you AGREE with the statement
(C) if you DISAGREE with the statement
(D) if you STRONGLY DISAGREE with the statement

1. There can be little action here until the supervisor approves a decision. .......... A  C  D
2. A person who wants to make his/her decision would be quickly discouraged here. .......... A  C  D
3. Every small matter has to be referred to someone higher up for a final decision. .......... A  C  D
4. I have to ask my boss before I do almost anything. ................. A  C  D
5. Any decision I make here has to have my boss' approval. ................. A  C  D

SCORING FORMAT: Items of this subscale are scored:

A  C  D
4 3 2 1

Source: Centralization subscales are adopted from the scales found in "Relationship of Centralization to Other Structural Properties," by Jerald Hage and Michael Aiken, Administrative Science Quarterly, Vol. 17, No. 1 (June, 1972).
APPENDIX P

SUPERVISOR OPINION QUESTIONNAIRE:
SIST SCALES AND SCORING FORMATS
SUPERVISOR OPINION QUESTIONNAIRE

DIRECTIONS:

a. READ each item carefully.

b. THINK about how frequently you, as a supervisor, should engage in the behavior described by the item.

c. DECIDE whether you should (A) always, (B) often, (C) occasionally, (D) seldom, or (E) never act as described by the item.

d. DRAW A CIRCLE around one of the five letters (A B C D E) following the item to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

e. MARK your answer as shown in the example below.

Example: Often act as described ............................................. A B C D E
Example: Never act as described ............................................. A B C D E
Example: Occasionally act as described ................................ A B C D E

INITIATION OF STRUCTURE

1. Let employees know what is expected of them .................. A B C D E
2. Encourage the use of set ways of doing things ................ A B C D E
3. Try out your ideas in the group ....................................... A B C D E
4. Make your attitude clear to the group ....................... A B C D E
5. Describe what shall be done and how it shall be done ................. A B C D E
6. Assign group members to particular tasks .................. A B C D E
7. Make sure that your part in the group is understood by employees .................. A B C D E
8. Schedule the work to be done .................................. A B C D E
10. Ask employees to follow standards and regulations .......... A B C D E

CONSIDERATION

1. Be friendly and approachable .......................... A B C D E
2. Do little things to make it pleasant to work here...........................................
3. Put suggestions made by the group into operation...........................................
4. Treat all employees as your equals.................................................................
5. Give advanced notice of changes.................................................................
6. * Keep to yourself............................................................................................
7. Look out for personal welfare of employees.................................................
8. Be willing to make changes...........................................................................
9. * Refuse to explain your action......................................................................
10. * Act without consulting the group...............................................................  

SCCRIN FORM: All items of the above two subscales, except the items marked (*) are scored: 

A  B  C  D  E

Starred items are scored in the reverse direction.

Source: R. M. Stogdill, Leader Behavior Description Questionnaire - Form XII, Ohio State University, 1953
DIRECTIONS *
a. READ each statement carefully.
b. DECIDE whether your supervisor, manager, (A) always, (B) often, (C) occasionally, (D) seldom or (E) never acts as described by the statement.
c. DRAW A CIRCLE around one of the five letters (A, B, C, D, E) following the statement to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

Example: Often acts as described ................. A C D E
Example: Never acts as described ................. A B C D
Example: Occasionally acts as described ...... A B C D E

1. Lets employees know what is expected of them ........ A B C D E
2. Keeps to himself/herself ........................... A B C D E
3. Encourages the use of set ways of doing things .... A B C D E
4. Is friendly and easy to talk to ..................... A B C D E
5. Tries out his/her ideas in the group ............... A B C D E
6. Does little things to make it pleasant to work here ... A B C D E
7. Makes his/her attitude clear to the group .......... A B C D E
8. Puts suggestions made by the group into operation ... A B C D E
9. Describes what shall be done and how it shall be done . A B C D E
10. Treats all employees as his/her equals ............ A B C D E
11. Assigns group members to particular tasks ........ A B C D E
12. Refuses to explain his/her actions ................ A B C D E
13. Schedules the work to be done .................... A B C D E
14. Gives advance notice of changes .................. A B C D E
15. Makes sure that his/her part in the group is understood by employees ......................... A B C D E
16. Looks out for personal welfare of employees ...... A B C D E
17. Keeps fixed quality of performance ............... A B C D E
18. Is willing to make changes ........................ A B C D E
19. Asks that employees follow rules and regulations .. A B C D E
20. Acts without consulting the group ............... A B C D E
a. DRAW A CIRCLE around one of the five letters (A B C D E) following the statement to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

Example: Often participate in the decision as described .................... A (2) C D E
Example: Seldom participate in the decision as described ..................... A B C D E
Example: Never participate in the decision as described ....................... A B C D E

31. How frequently do you participate in the decision on the adoption of new rules and policies? ....... A B C D E
32. How frequently do you participate in the decision on the adoption of new programs? (Sales contests, etc.) A B C D E
33. How frequently do you usually participate in the decision to hire new employees? ..................... A B C D E
34. How frequently do you participate in the decision on the promotion of any of the employees? ........ A B C D E

DIRECTIONS **
a. READ each of the following statements carefully.

b. Show your AGREEMENT with the statement by DRAWING A CIRCLE around:

(A) if you STRONGLY AGREE with the statement
(B) if you AGREE with the statement
(C) if you DISAGREE with the statement
(D) if you STRONGLY DISAGREE with the statement

Example: Agree with the statement .............. A (2) C D
Example: Strongly disagree with the statement. A B C D
Example: Disagree with the statement .......... A B C D

25. There can be little action here until the supervisor approves a decision ............................. A B C D
26. A person who wants to make his/her own decision would be quickly discouraged here .................. A B C D
27. Every small matter has to be referred to someone higher up for a final decision .................. A B C D
28. I have to ask my boss before I do almost anything .... A B C D
29. Any decision I make has to have my boss' approval .... A B C D

Please answer the following questions:

30. What is the maximum number of employees working under your supervisor at a time? ______
31. Your Age ___________
32. Your Sex ___________
33. How long in this job? ___________
34. Do you consider your job as part-time or full-time? ___________

* The first part of this questionnaire is revised from the form "E.D. XII, occupant IV", at The Ohio State University.

** Copyright 1932 by J. T. Herz and W. T.close.
APPENDIX D

REVISED SUPERVISOR OPINION QUESTIONNAIRE
DIRECTIONS
a. READ each statement carefully.

b. THINK about how frequently you, as a supervisor, should engage in the behavior described by the statement.

c. DECIDE whether you should (A) always, (B) often, (C) occasionally, (D) seldom, (E) never act as described by the statement.

d. DRAW A CIRCLE around one of the five letters (A - C D E) following the statement to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

Example: Often act as described ............... A  
Example: Never act as described ............... A  
Example: Occasionally act as described .... A  

1. Ask employees to follow standards and regulations .... A B C D E
2. Act without consulting the group .................. A B C D E
3. Keep definite standards of performance ............ A B C D E
4. Be willing to make changes ....................... A B C D E
5. Schedule the work to be done .................... A B C D E
6. Look out for personal welfare of employees .... A B C D E
7. Make sure that your part in the group is understood by employees .................. A B C D E
8. Give advance notice of changes .................. A B C D E
9. Assign group members to particular tasks .......... A B C D E
10. Treat all employees as your equals ............. A B C D E
11. Describe what shall be done and how it shall be done ........ A B C D E
12. Keep to yourself .................. A B C D E
13. Try out your ideas in the group ................. A B C D E
14. Put suggestions made by the group into operation .... A B C D E
15. Encourage the use of set ways of doing things .... A B C D E
16. Do little things to make it pleasant to work here .... A B C D E
17. Make your attitude clear to the group .......... A B C D E
18. Be friendly and approachable .................... A B C D E
19. Let employees know what is expected of them .... A B C D E
20. Refuse to explain your action .................. A B C D E

Please answer the following questions:

21. What is the maximum number of employees you supervise at a time? ________
22. Your age: __________
23. Your sex: __________
24. How long in this position? __________
25. Have you had any similar work experience elsewhere? __________, if yes for how long? __________

* Revised from the copyright 1969 by the Ohio State University
APPENDIX E

COVER LETTER FOR THE

SUPERVISOR OPINION QUESTIONNAIRE
Dear Manager:

I would like to request your assistance in a research program which is a part of a doctoral dissertation in the Management Department, Louisiana State University. This Ph.D. dissertation research study deals with work groups in general, and does not deal with any particular company or individual person.

Enclosed is a questionnaire that you are asked to read and answer. Your response to this questionnaire is vital to the success of the study. Knowing that this is a demand upon your valuable time, the questionnaire is prepared such that it should not take more than ten minutes of your time. It is important that you answer all of the questions since incomplete questionnaires cannot be used for the purpose of the study.

The data for this research is gathered in part through the attached questionnaire and in part through another questionnaire that you are asked to distribute among your subordinates. Since the two types of questionnaires are complementary, it is important that your subordinates answer the questions pertinent to your supervision, and not supervision of other supervisors, if there are any. Your distribution of the questionnaires among your subordinates and the emphasis that they should keep your supervision in mind when answering the questions, will assure the proper collection of data.

Since it is not the purpose of this research to study a particular organization, there is no name or identification mark that would reveal the identity of the respondent. Your responses, along with the responses of other participants, will be collected by the researcher himself to assure the confidentiality.

You will be provided a copy of the findings of this study. Your participation and cooperation in this research project is very important factor which has a significant impact upon the success of the study, and the researcher will be grateful for your assistance. Please feel free to contact me if you have any further questions.

Sincerely,

Ro’ad Derakhshan
Ph. D. Candidate
Management Department
Louisiana State University
APPENDIX F

COVER LETTER FOR THE

EMPLOYEE QUESTIONNAIRE
Dear Friend:

I would like to ask for your cooperation in a research program which deals with work groups in general, and does not deal with any particular company or individual person. This study is a part of a Ph. D. dissertation in the Management Department, Louisiana State University.

Here is a questionnaire that you are asked to read and answer. Your response to all of the questions is necessary for the success of this study. Please do not leave any question unanswered. The questionnaire is prepared such that it should not take more than ten minutes of your time.

In answering many of the questions you need to remember how your supervisor, manager, acts. If you work under several managers, recall the actions of only one supervisor, the one who distributed the questionnaire.

If you notice, there is no name or identification mark that would reveal the identity of the respondent. Your responses, along with the responses of other employees will be collected in a ballot box by the researcher himself to assure confidentiality.

Your participation and cooperation in this research project is very important for the success of this study, and is deeply appreciated.

Sincerely,

[Name]
Ph. D. Candidate
Department of Management
Louisiana State University
1. Answer all the questions

2. Fold and put the questionnaire in this envelope

3. Seal and drop this envelope in the ballot box
APPENDIX II

PERMISSION REQUESTS FOR THE USE OF QUESTIONNAIRE SUB-SCALES AND SUBSEQUENT AUTHORIZATIONS
May 23, 1979

Dr. Michael T. Aiken
Department of Sociology
University of Wisconsin, Madison
Madison, Wisconsin 53706

Dear Professor Aiken:

I am writing to request your permission to use "The Index of Participation in Decision Making" and "The Index of Hierarchy of Authority", developed by you and Dr. Page, in my dissertation. These indices appeared in "Relationship of Centralization to Other Structural Properties", Administrative Science Quarterly, vol. 12, no. 1, June 1967: pp. 78-79. I would appreciate if you also provide some information on the reliability of these questionnaires since no such information was provided in the referred article.

Your help in regards to this request has a great value to me.

Sincerely,

Foad Derakhshan
Doctoral Student
Mr. Foad Derakhshan  
Doctoral Student  
Department of Management  
Louisiana State University  
Baton Rouge, Louisiana 70803  

Dear Mr. Derakhshan:  

Given that the scale you mention are published, you of course need no permission to use them. Bob Dewar, now an Assistant Professor at Northwestern University School of Business, calculated the reliability of these scales for three successive uses of them. I suggest you contact him for this information.  

Sincerely yours,  

[Signature]  
Michael Aiken  
Professor  

MA:sm
May 23, 1979

Dr. Jerald T. Hage
Department of Sociology
University of Wisconsin, Madison
Madison, Wisconsin 53706

Dear Professor Hage:

I am writing to ask for your permission to use "The Index of Participation in Decision Making" and "The Index of Hierarchy of Authority", developed by you and Dr. Aiken, in my dissertation. These indices appeared in "Relationship of Centralization to Other Structural Properties", Administrative Science Quarterly, vol. 12, no. 1, June 1967: pp. 78-79. I would appreciate if you also send me some information on the reliability of these questionnaires since no such information was provided in the referred article.

I truly appreciate your help in regards to this request.

Sincerely,

Foad Derakhshan
Doctoral Student
Mr. Foad Derakhshan  
Department of Management  
Louisiana State University  
Baton Rouge, Louisiana 70803  

Dear Mr. Derakhshan:

We received your letter on June 14, 1979 and then it was forwarded to me in the south of France so please excuse the delays but they have been unavoidable.

Of course, you may use this index. Good luck in your research.

As ever,

Jerald Hage  
Chairman

JH/gg
May 27, 1979

Director, Support Services, 210 Hagerty Hall
College of Administrative Science
The Ohio State University
1776 College Rd.
Columbus, Ohio 43210

Dear Sir:

I am writing to request your permission to use a part of the "Leader Behavior Description Questionnaire-Form XII", 1969 copyright in my doctoral dissertation.

Your help in regards to granting the permission is truly appreciated.

Sincerely,

Foad Derakhshen

PERMISSION IS GRANTED TO USE OUR LBDQ XII, IN ACCORDANCE WITH OUR POLICY, ATTACHED.

ADELE ZIMMER

MAY 30, 1979

SS/CAS/THE OSU
STATEMENT OF POLICY

Concerning the Leader Behavior Description Questionnaire and Related Forms

Permission is granted without formal request to use the Leader Behavior Description Questionnaire and other related forms developed at The Ohio State University, subject to the following conditions:

1. **Use:** The forms may be used in research projects. They may not be used for promotional activities or for producing income on behalf of individuals or organizations other than The Ohio State University.

2. **Adaptation and Revision:** The directions and the form of the items may be adapted to specific situations when such steps are considered desirable.

3. **Duplication:** Sufficient copies for a specific research project may be duplicated.

4. **Inclusion in dissertations:** Copies of the questionnaire may be included in theses and dissertations. Permission is granted for the duplication of such dissertations when filed with the University Microfilms Service at Ann Arbor, Michigan 48106 U.S.A.

5. **Copyright:** In granting permission to modify or duplicate the questionnaire, we do not surrender our copyright. Duplicated questionnaires and all adaptations should contain the notation "Copyright, 19--, by The Ohio State University."

6. **Inquiries:** Communications should be addressed to:

Center for Business and Economic Research
The Ohio State University
1775 South College Road
Columbus, Ohio 43210 U.S.A.

1978
APPENDIX I

CORRELATION MATRIX
## CORRELATION MATRIX

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* Refer to Table 4-1 (page 42) for the complete name of the variables corresponding to the codes in the matrix above.
VITA

Foad Derakhshan was born in Ahvaz, Iran, on February 25, 1949. He graduated from Khararmi High School, Teheran, with a concentration in mathematics. Then he served in the Iranian armed forces. Upon completion of his military service, he entered Tehran Business College, where he received a Bachelor degree in Business Science. In 1974, he entered the M.P.A. program at Louisiana State University (L.S.U.), Baton Rouge. After receiving his master degree in 1976, he continued studies toward a Ph.D. degree in Management at L.S.U. Mr. Derakhshan worked with a consulting firm in Iran, and is presently a faculty member of Indiana University.
Candidate: Foad Derakhshan

Major Field: Management

Title of Thesis: A study of the relationships between span of supervision and leadership directiveness in Fast-Food Restaurants

Approved:

[Signature]
Major Professor and Chairman

[Signature]
Dean of the Graduate School

EXAMINING COMMITTEE:

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Edmond R. Gray

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Date of Examination:

November 30, 1979