TECHNOLOGY, CONTEXT, STRUCTURE AND WORK UNIT EFFECTIVENESS

by

ESRA DURGUT

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APPROVED BY

Dr.Behlül Üsdiken

Dr.Muzaffer Bodur

Dr.Hayat Enbiyaoğlu

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TECHNOLOGY, CONTEXT, STRUCTURE AND WORK UNIT EFFECTIVENESS

The purpose of this thesis is to empirically examine the relationship between technology, context, structure and the impact of the technology-structure fit on work unit effectiveness.

Literature research shows that technology, structure and context have been considered as the major determinants of organizational effectiveness in many studies.

This study was conducted in 27 work units of a large leather garments producing company. Data were collected through a questionnaire which comprised questions related to measuring three dimensions of technology; seven dimensions of structure; three dimensions of context and six dimensions of effectiveness. Respondents were unit supervisors. Major decision makers of the company were also referred as external raters to decrease the subjectivity in the performance measurement.

Methodology of the study consisted of correlational analysis to study technology-context-structure-effectiveness relationship; fit analysis to determine the congruence between technology and structure; Chi-square analyses to study the relationship between technology-structure fit and work unit effectiveness.

Our findings revealed little support for the effects of technology on work unit structure. Results of context-structure relationship showed that the variance in the unit structure was mostly explained by contextual factors. Effective units were found to have fit between their technology and structure; whereas less effective units have no fit.

The results of the study contributed to the organization and work units studied, through providing a deep understanding of the effects of technology-context-structure relationship on work unit effectiveness; and to further studies in terms of introducing new measures of context affecting work unit structure.

TEKNOLOJİ, ORTAM, YAPI VE İŞ ÜNİTESİ ETKİNLİĞİ

Bu tezin amacı; teknoloji, ortam ve yapı arasındaki ilişkiyi ve teknoloji-yapı uyumluluğunun iş ünitesi etkinliği üzerindeki etkilerini ampirik olarak incelemektir.

Literatür araştırıldığında, birçok çalışmada teknoloji, yapı ve ortamın organizasyon etkinliğinin başlıca belirleyicileri olrak ele alındıkları görülmektedir.

Bu çalışma, büyük bir deri giysi üreticisi firmanın 27 iş ünitesi üzerinde yapılmıştır. Veriler; üç teknoloji, yedi yapı, üç ortam ve altı etkinlik boyutuna ilişkin soruların yer aldığı bir anket aracılığı ile toplanmıştır. Anketi cevaplandıran kişiler ünite şefleridir. Ayrıca performans ölçümünde sübjektifliği azaltmak amacı ile firmanın karar verme/yönetim mekanizmasını yürüten kişilere de dış değerlendiriciler olarak başvurulmuştur.

Çalışmanın metodolojisi, teknoloji-ortam-yapı-etkinlik ilişkilerini irdelemek üzere korelasyon analizi, teknoloji ile yapı arasındaki uyumluluğu incelemek üzere uyum analizi, teknoloji-yapı uyumu ile iş ünitesi etkinliği arasındaki ilişkiyi incelemek üzere "Chi-square" analizinden oluşmaktadır.

Bulgularımız, teknolojinin iş ünitesi yapısı üzerindeki etkinliğini fazla desteklememektedir. Ortam-yapı ilişkisi konu-

sundaki sonuçlarımız, iş birimi yapısındaki değişikliklerin çoğunlukla ortamsal faktörler ile açıklanabildiğini göstermiştir. Etkin ünitelerin teknolojileri ile yapıları arasında uyum görüldüğü, buna karşılık daha az etkin ünitelerde bu uyumun bulunmadığı gözlenmiştir.

Çalışmanın sonuçları, teknoloji-ortam-yapı ilişkilerinin iş ünitesi etkinliği üzerindeki etkileri konusunda derinlemesine bir anlayış geliştirmesi bakımından örnek alınan şirkete ve şirketin iş ünitelerine; iş ünitesinin yapısını etkileyen yeni ortam ölçütleri tanımlaması bakımından ilerideki muhtemel çalışmalara yol göstermiş ve katkıda bulunmuştur.

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I. INTRODUCTION

Technology, structure and context (size, dependence and external control) have been operationalized independently or interactively as the major determinants of organizational effectiveness in many studies. Although these studies have generated more controversy than agreement, it may be concluded that the effectiveness of organization closely relates to the decisions on technology, context and structure.

Many researchers have studied only technology structure relationship; some of them have looked for only context-structure relationship whereas contingency theorists have stated that organizations are more successful when their structures conform to their technologies.

Literature shows that these studies have been conducted at the organization, subunit and individual level.

The purpose of this study is to empirically examine the relationship between technology, context, structure and the impact of the technology-structure fit on work unit effectiveness.

The level of analysis is the work unit which was defined as the smallest formal grouping of personnel within an organization.

The reason for the implementation of this study at work unit level is that, the relationship between technology, structure, context and effectiveness is strongest at this level.

In this study, context is viewed as external factors affecting work unit structure and performance. It was differentiated from technology dimensions by assuming that context and technology are related to different structural variables. Therefore, nature of the work performed by unit - task difficulty and task variability - were operationalized as technology dimensions; whereas size, external control over unit, dependence on other units constituted the dimensions of context.

Work unit performance is composed of the quantity, quality, innovation, goal achievement, reputation for work excellence and personnel satisfaction dimensions.

Profitability, absenteeism, efficiency, managerial task and interpersonal skills which have been treated in many studies as indicators of effectiveness are not included in the scope of the effectiveness definition.

Relating to the purpose, the main assumption of the study is that technology will affect the design of the work unit structure. The relevant assumption is that, when there is a fit between technology and structure, this fit will relate to work unit effectiveness. Effective work units will have fit between their technology and structure. Also, contextual factors - size, dependence, external control - were studied to explain the variance in structure and work unit effectiveness.

The study was conducted in a leather-garments producing company using 27 different work units and has the characteristics of exploratory research design. Assumptions were based on the

findings of earlier studies.

The importance of studying technology-context-structure-effectiveness relationship is that it leads to a deep understanding of how the structural characteristics of work units are affected by technological and external complexity and how unit effectiveness is related to the fit between technology and structure; which in turn, leads to overall effectiveness within the company.

II. TECHNOLOGY, CONTEXT, STRUCTURE AND WORK UNIT EFFECTIVENESS

A discussion of the concepts of technology, context, structure and effectiveness with a review of literature related to these concepts; the contingency theory and its implicaton for the study; the implication of the level of analysis and types of measures are presented in this chapter. Empirical studies on technology-structure relationship in general and at the work unit level are summarized in the final section.

2.1. Concepts of Technology

"At the most global level, technology has been defined as the organizational process of transforming inputs into outputs" (Fry, 1982:533). Literature on technology has presented numerous conceptualization and operationalizations that have made it difficult to compare results across studies.

In Fry's (1982) survey of 37 technology-structure studies, technology has been defined in five different ways:

1) Technical complexity
2) Operations technology and operations variability
3) Interdependence
4) Routine-nonroutine
5) Manageability of raw materials.

Reviews of literature on technology have pointed out that different measurement scales often have common names; variables with different names often overlap conceptually. Technology conceptions of many studies can be traced to one of the five dimensions mentioned in Fry's (1982) survey.

Technology can be distinguished at three different levels: individual, work unit and the organization. "It is likely that characteristics of technology at one level may not be reflected in the organization's technology at the next level" (Fry and Slocum, 1984:222). Level of analysis is a decision variable and has influence on the other measures of the study conducted.

The use of different levels of analysis has made it difficult to compare the results across studies.

2.1.1. Perrow's Model of Technology

As Withey, Daft and Cooper (1983) quoted in their study, Perrow (1967, 1970) defined organizational technology as the actions employed to transform inputs into outputs. Perrow identified two dimensions to describe these transformation processes. The first dimension is number of exceptions. This refers to task variety which can be defined as the frequency of unexpected events that occur in the conversion process. When the number of exceptions is high, unit members can not predict problems in advance and many tasks are unique. When the number of exceptions is low, tasks have little variety and are repetitious.

The second dimension is analyzability. When the conversion process is analyzable, the work can be reduced to mechanical steps and unit members can follow an objective, computational procedure to solve problems.

When work is unanalyzable, there is no objective procedure to tell a person how to respond. Unit members have to spend time thinking about how to solve problems, and they may search beyond available procedures.

As stated in Withey, Daft and Cooper's (1983) article, Perrow proposed the existence of the routine-nonroutine diagonal which contains elements of both dimensions. He also suggested that the two dimensions, although conceptually different, may be statistically correlated in organizations, because when problems are unexpected, they are also less analyzable. A positive correlation between the two dimensions has been found in empirical studies (Daft and Macintosh, 1981; Van de Ven and Delbecq, 1974).

Several studies operationalized one or more of the dimensions he proposed. Six technology studies based on Perrow's study are presented here. Hage and Aiken (1969) used only one dimension of Perrow's model, routine-nonroutine diagonal, to study the relationship among technology and structure and goals in a sample of welfare agencies. Lynch (1974) developed a measurement scale based on Perrow's theory using a sample of departments from three large academic libraries. The two dimensions - routineness and predictability - correspond to Perrow's exceptions and analyzability dimensions. Lynch argued that a third dimension, knowledge, was implicit in Perrow's model, which is relevant, as search behaviors depend on workers' knowledge of the raw materials. She also used interdepartmental task interdependence as one of the technology scales, but results of factor analysis revealed that task interdependence was not a technology variable but a structural one.

Van de Ven and Delbecq's (1974) study is based on two dimensions of technology. They used the terms variability and difficulty as corresponding to Perrow's exceptions and

analyzability. In the study, 120 employment and security agency work units were classified on the basis of structure and support was found for concluding that the work units discriminate on the basis of two technology dimensions.

Daft and Macintosh (1981) proposed a model that relates information processing to the task variety and analyzability. Task variety and analyzability were developed based on the two dimensions described by Perrow.

Van de Ven and Ferry (1980) developed items to assess task variability and task difficulty as part of a large organizational assessment questionnaire. The items correspond roughly to Perrow's exception and analyzability dimensions.

Fry and Slocum (1984) used Perrow's technology in 61 work units of a large police department to test a contingency model of effectiveness. They conceptualized technology dimensions as number of exceptions and search behavior, as corresponding to Perrow's exceptions and analyzability dimensions.

In the present study, the technology dimensions have been conceptualized as task variability and task difficulty by referring to Perrow's exceptions and analyzability dimensions. The third dimension, task interdependence was adopted from the measurement scale of Van de Ven and Ferry's (1980) study.

2.2. Concept of Structure

As described in Fry's (1982) study, structure is defined as the arrangement of people, departments and other subsystems in the organization. Fry (1982) reported that complexity (vertical and horizontal differentiation), formalization and centralization (hierarchy of authority and participation) are

the major theoretical dimensions of structure in technology-structure research.

Structural factors have been examined at different levels (work unit level, organizational level) in the literature. The scope of this study is the unit structure. Work unit structure is defined as "the formal, relatively permanent arrangement of people and equipment within an organizational unit to perform its assignment" (Van de Ven and Delbecq, 1974: 183).

2.3. Contextual Factors

"Organization context refers to all the conditions and factors external to the organization or unit under consideration" (Van de Ven and Ferry, 1980:90). Context is closely related to the definition of the environment as the set of constraining phenomena that exist external to the organization or to the unit within which the organization must function. Van de Ven and Ferry (1980) define the nature of the work performed by the unit, the size of the unit (number of personnel), external unit dependence - job dependence on other units - as contextual factors of the work unit.

The theory underlying the development of the contextual dimensions states that contextual factors:

- largely predict how the unit will be organized;
- affect the degree to which work processes can be structured;
- affect the amount of specialization, standardization, discretion and expertise of the work unit required to perform the tasks.

As reported in Reimann's (1980) study, the Aston group's (Hickson et al., 1969) study and subsequent studies (Inkson,

Pugh and Hickson, 1970; Child and Mansfield, 1972; Hickson, Hinings, Mc Millan and Schwitter, 1974) concluded that contextual variables, such as size and dependence, were more important predictors of organization structure than technology.

Various Aston group studies found that larger organizations are more specialized, have more rules and a greater decentralization of decision making.

In a study of 20 manufacturing plants, Reimann (1980) found that contextual variables (organization size and dependence) were significantly related to most aspects of structure. Size of the general staff was related primarily to organization size, which in turn was positively related to degree of specialization and vertical differentiation. The study showed that dependence on other organizations (measured by taking into consideration the impersonality of origin, the status and the size of unit relative to parent organization) was strongly related to formalization. This finding reflected the fact that relatively dependent firms tended to be more highly formalized than did their independent counterparts. Also, decentralization of personnel decisions was found to be a function of decreasing dependence.

Van de Ven and Ferry (1980:243) define dependence on other units as the extent to which one unit's input, process and output activities depend upon the activities performed in the other units. Based on data collected on 334 work units of an employment security agency, correlations among dependence on other units and unit specialization were found to be positive.

In a study of fifty Japanese factories, Marsh and Mannari (1981) tried to show the effects of technology (size held constant) and of size (technology held constant) on organizational structure.

Only two dimensions of structure, structural differentiation and formalization were found to be more a function of size than of technology, supporting the findings of Aston group. Marsh and Mannari stated that size was not the only cause of variation in structure. They used five contextual variables - internal dependence, external dependence, autonomy, age of the factory's parent company and number of dispersed sites in the company - that influence structure. The only contextual variable with any effect on formalization was internal dependence; the more dependent a factory is on its parent organization, the more formalized it is. Other structural variables were also significantly affected by the contextual variables, dependence and age. Factories that were more internally dependent on their parent organization had fewer departments, fewer hierarchic levels and less complexity.

Hrebiniak (1974) stated that technology and structure relationship might be affected by the organizational control system. The relationship between technology and structure in many organizational settings may remain unclear until the control structure is taken into account. Two dimensions of control were considered: the extent to which it was personal or mechanical and the extent to which it was unitary or fragmented. The personal-mechanical dimension indicates the degree to which attainment of goals and the division of flow of work depends on a) an individual's influence or authority over others, or b) regulation by impersonal administrative means, such as performance programs or mechanical means.

Unitary control refers to the existence of a single integrated control system, whereas fragmented control refers to multiple control criteria that organizational members must satisfy.

Based on the assumption that centralization is likely to lead to an emphasis on control (Pheysey et al., 1971:62), in this

study it has been assumed that an important aspect of the control system for the structure is external control over unit which means organizational centralization. Work units are likely to satisfy the multiple criteria set by top policy makers and the work unit's structure is likely to be influenced by the external authority exerted on the unit by higher and functional management. Therefore, in this study, external control over the unit has been considered as an important contextual variable affecting work unit structure.

Based on the results of the previous studies, contextual factors (size, dependence on other units and external control over unit) were considered as important factors which are expected to affect the work unit's structure.

2.4. Effectiveness

For the past fifty years, organizational researchers have been concerned with the effectiveness of organizations and confusion persists regarding what organizational effectiveness is. It has rarely been possible to compare studies of effectiveness, since few have used common criteria for indicating effectiveness (Steers, 1975). Definitions of organizational effectiveness vary depending on the particular model being used.

As reported in Steer's (1975) article, review of literature shows that effectiveness was considered as unidimensional (Thorndike, 1949) versus multidimensional (Georgopoulos and Tannenbaum, 1957; Yuchtman and Seashore, 1967; Friedlander and Pickle, 1968; Mott, 1972; Duncan, 1973). Effectiveness has been composed of different criteria at different life stages (Cameron, 1977); related to different constituencies (Scott, 1977); and was considered as altering in criteria

when different levels of analysis are used (Price, 1972) as quoted in the study of Cameron (1978).

In Goodman and Pennings' (1977) book, thirty different variables that are used to reflect organizational effectiveness have been identified. Some of these variables are: overall effectiveness, productivity, efficiency, quality, absenteeism, job satisfaction, innovation/adaptation, managerial interpersonal/task skills and profit.

As quoted in Schoonhoven's (1981) study, effectiveness is defined as an organization's ability to create acceptable outcomes and actions (Pfeffer and Salancik, 1968).

Consistent with this definition, the outcomes of work units constitutes the quantity and quality effectiveness dimensions of the present study.

Other dimensions of effectiveness are innovation, morale of unit personnel, reputation for work excellence, goal achievement.

2.5. Contingency Theory

"Contingency theory asserts that, in order to be effective, organizational structures should be appropriate to the work performed and/or to the environmental conditions facing the organization" (Schoonhoven, 1981:350). As quoted in Schoonhoven's (1981) sudy, statements from contingency theorists and researchers suggest that a particular structure should be "appropriate for" a given environment (Thompson, 1967), that organizations are more successful when their structures "conform" to their technologies (Woodward, 1965:69-71), that an organization's internal states and process should be "con-

sistent with" external demands (Lawrence and Lorsch, 1969), that organizations should, attempt to maximize "congruence" between technology and their structure and adapt their structures to "fit" their technology (Perrow, 1970:80).

According to Schoonhoven (1981), when contingency theorists assert that there is a relationship between two variables (dimensions of technology and structure) which predicts a third variable (organizational effectiveness), they are stating that an interaction exists between the first two variables.

2.5.1. A Review of Some Empirical Studies on Contingency Theory

As quoted in Reimann's (1980) article, in a study of 100 industrial firms, Joan Woodward (1975) found that the most successful firms were those that had achieved the best match between their structures and their technologies. Since Woodward, contingency theory has been widely accepted in the literature, but some researchers have suggested that contingency theory is not a very useful approach to explaining differences in the structure and effectiveness of organizations.

Mohr (1971) suggested that there were problems with contingency theory. In testing the consonance theory based on data from 144 work groups of local health departments, he found no support for the hypothesis that the work group will be most effective when autocratic supervision is employed in routine jobs and democratic supervision in nonroutine jobs. The research found a very weak relationship between technological manageability and subordinates' participation in decision making. But, his expectation that task interdependence leads to participativeness and to a more organic structure, was confirmed by his findings. In his study, various aspects of effectiveness were included (satisfaction, motivation, approval,

quantitative and qualitative effectiveness, innovativeness). Mohr found that structure alone had more of an impact on effectiveness than did the degree of consonance between structure and technology.

In a study of 40 brokerage offices, Pennings (1975) tested the "structural contingency model". He did not find strong support for this model, which defines organizational effectiveness as a function of the goodness of fit or consistency between environmental and structural variables. On the basis of the structural contingency model, Pennings expected that correlations between environmental and structural variables would be high and positive, but most correlations were negative and insignificant. Complexity was not related to specialization and positively related to participation. Based on the results, he concluded that variance in effectiveness could be explained due to structural variables and he proposed that the structural contingency model may hold for the work units that have stronger degree of interdependence.

Schoonhoven (1981), in a study of 17 hospital operating rooms, suggested that relationship between technology, structure and organizational effectiveness are more complicated than contingency theory assumes. She found symmetrical and nonmonotonic interactions between technology, structure and effectiveness. When uncertainty was high, decentralization had positive effect on effectiveness. When uncertainty was low, increased decentralization and destandardization resulted in lower effectiveness.

Argote (1982), in a study of 30 emergency units located in a hospital, found that programmed means of coordination (rules, regulations, scheduled meetings) made a greater contribution to organizational effectiveness under conditions of low input uncertainty than high input uncertainty. Conversely, non-

programmed means of coordination (general policies, mutual adjustment) made a greater contribution to effectiveness when uncertainty was high than when it was low.

Fry and Slocum (1984), tested the contingency model using three measures of technology - number of exceptions, search behavior, interdependence -, three measures of unit structure - centralization, formalization, specialization - and two measures of work unit effectiveness - performance and commitment -. The study was conducted in 61 lower to middle level work units of a large police department. Effective work units were hypothesized to have structural characteristics appropriate to their level of technological uncertainty. Less effective units were hypothesized to have a mismatch between technology and structure. Little support was found for hypothesized relationships.

2.6. Level of Analysis of Technology, Structure and Effectiveness Studies

Literature shows that studies of effectiveness, technology and structure have been conducted at the organization, subunit and individual levels.

As Cameron (1978) reviewed in his article, in effectiveness studies, Scott and Cummings (1980) argued for measuring effectiveness at the individual level; Van de Ven and Ferry (1980) and Pennings and Goodman (1977) argued for the subunit level; Yuchtman and Seashore (1967) for the organizational level.

Numerous writers in technology-structure area have recognized the confusion that may result from attempts to compare and generalize findings of technology-structure relationships across three different organizational levels:

1- The whole organization;
2- The work group or subunit and;
3- The individual.

Organizational level studies have assumed implicitly that the organizations comprising their sample have a single dominant technology (Fry, 1982:539). Many studies show that the technical complexity, operating variability and operations technology are dominant at the organizational level (Woodward, 1965; Reimann, 1980).

There have been few empirical studies of structure and technology at the work unit level. Extensive review by Fry (1982) discovered only 10 studies. Also, the recent studies, Schoonhoven (1981) and Argote (1982) have tested contingency theory at work unit level. The reason for using the work unit level of analysis is that statistical findings between technology and other variables have been strongest at the work unit level (Fry, 1982). Another explanation is that homogeneity is greater; diverse activities are less likely to confound the relationship between technology and structure. Moreover, participants are not several levels removed in the hierarchy (Withey, Daft and Cooper, 1983). By studying the unit, the technological complexity encountered by the organization and its total structure can be better understood.

As quoted by Van de Ven and Ferry (1980), House (1968) stated that organizational units may obstruct the achievement of corporate goals and strategies, or alternatively, support and complement the overall purposes of the organization.

2.7. Types of Measures Used in the Literature

Fry (1982) stated that discrepancies in findings observed among technology-structure studies may be the result of using either objective or perceptual (subjective) measures. Objective measures are direct meaures which may be obtained with no direct involvement by organizational members (i.e. global assessment from records or interviews with institutional spokesmen); whereas subjective measures based on aggregation of interview or questionnaire data from organizational members. Technology and structure literature shows that studies at the individual and subunit levels used subjective measures and organization level studies used objective measures.

Data of the present study is based on subjective measures of technology, context, structure and work unit effectiveness.

2.8. Technology-Structure Relationship

Research on technology and its impact on structure seems to have generated more controversy than agreement (Daft and Macintosh, 1981; Fry, 1982; Withey, Daft and Cooper, 1983). Literature reveals many studies showing clear relationship between technology and various components of structure.

2.8.1. Review of Literature

a. Technology-Structure Research in General

Woodward's (1965) study was the first empirical research in the literature, of technology-structure relationship. Woodward found relationship between technological complexity and structural complexity and centralization, at organizational

level. Results of Inkson et al.'s (1970) study showed that as technology becomes uncertain and less predictable, hierarchy of authority declines and formalization increases.

Hage and Aiken (1969) concluded that as the routineness of the work increases, the structure of the organization becomes more formalized and more centralized.

Based on these results, it can be concluded that few studies at organizational level revealed support for a significant relationship between technology and structure.

b. Review of Work Unit Level Studies

A few empirical studies have been conducted at the work unit level.

Hrebiniak (1974), using three measures of technology - task predictability, task interdependence and task manageability - and five measures of group structure - job autonomy, participation, closeness of supervision, rule usage and unity of control -, found that when effects of supervision were kept constant, technology related to work unit structure. Specially, task manageability was negatively related to job autonomy and participation and positively related to rule usage. Participation was found positively correlated with task interdependence and task interdependence negatively correlated with rule usage. Hrebiniak concluded that on elimination of supervisory effects, technology may affect group structure to support the technological imperative, but the support is weak.

Van de Ven and Delbecq (1974) presented a task contingent model of work unit structure. They used two dimensions of technology - task difficulty and task variability - and data were collected from 120 work units within a large government employment-security agency. They concluded that the design

of work unit structures was affected by task difficulty and task variability. Fry and Slocum (1984) reported that, in another study of 197 work units in the same agency, Van de Ven, Delbecq and Koening (1976) found that perceived task uncertainty and work flow interdependence were associated with different modes of coordination. As task uncertainty increased, mutual work adjustments and group meetings increased. An increase in coordination also was observed when workflow interdependence increased.

Van de Ven and Ferry (1980), developed an organization assessment instrument to assess the organization's structure, technology and context at work unit levels.

Based on the organization assessment instrument, they tested the task contingent model of work unit design. Data were collected on 334 work units of a state employment security agency. The results showed that the task dimensions were more strongly correlated than contextual factors on structure and process dimensions. As task difficulty and variability increased, there were significant decreases in standardization of work procedures and significant increases in a) the expertise of unit personnel, b) the amounts of work discretion exercised by both unit members and the supervisor, c) the task interdependence among members.

Also, they found that increases in the size of work units were strongly associated with increase in the unit specialization.

The organization assessment instrument indices developed by Van de Ven and Ferry (1980) comprise the technology, structure and context dimensions of the present study.

Fry and Slocum (1984) used a sample of 61 work units from a large police department to test the contingency theory. The

results revealed little support for hypothesized technology-structure relationship. They found that exceptions correlated in unexpected manner with other technology and structure variables. Work units reporting more exceptions were able to find solutions through more analyzable search procedures that required little interdependence among unit members. These work units were more formalized and less specialized. Their expectation that participation would be positively related to exceptions and search behavior, was not confirmed.

This chapter presented technology, context and structure research and the contingency theory literature to serve as a basis for the study. With its conceptualization, the study falls in the scope of the technology-context-structure research area and of the contingency theory. Literature reviewed showed that a few studies succeeded to find a clear relationship between technology, context and structure; a few of them were able to test the contingency theory. These studies have a single aim and took part in the related research area. Unlike previous studies, this study aimed to present the relationship between the major components of an organization such as technology, context, structure and the effects of the interaction of the components on the organizational effectiveness. Therefore, it brought up the concepts of the different research areas together. The study fits to the literature reviewed at the work unit level.

III. RESEARCH DESIGN

3.1. Purpose of the Study

The purpose of the study is to empirically examine the relationship between technology, context, structure and the impact of the fit between technology and structure on work unit effectiveness.

In the first step, the main premise is that technology could have effect on the design of unit structure. Also, contextual variables were studied to explain the variance in the work unit structure.

The second step is developed with the purpose to verify the contingency theory based on the assumption that effective work units should have structural characteristic appropriate to their level of technological complexity.

The purpose of the third step is to study the effects of technology, context and structure, independently from each other, on the wok unit effectiveness.

The study conducted has the characteristic of the exploratory research design. No specific hypotheses were developed. Assumptions and expectations were based on the results of earlier studies.

The research can be directed to understanding how the design of the work units are affected by chnological uncertainty-interdependence and contextual factors and how the workgroup effectiveness is affected by the interaction of technology and structure.

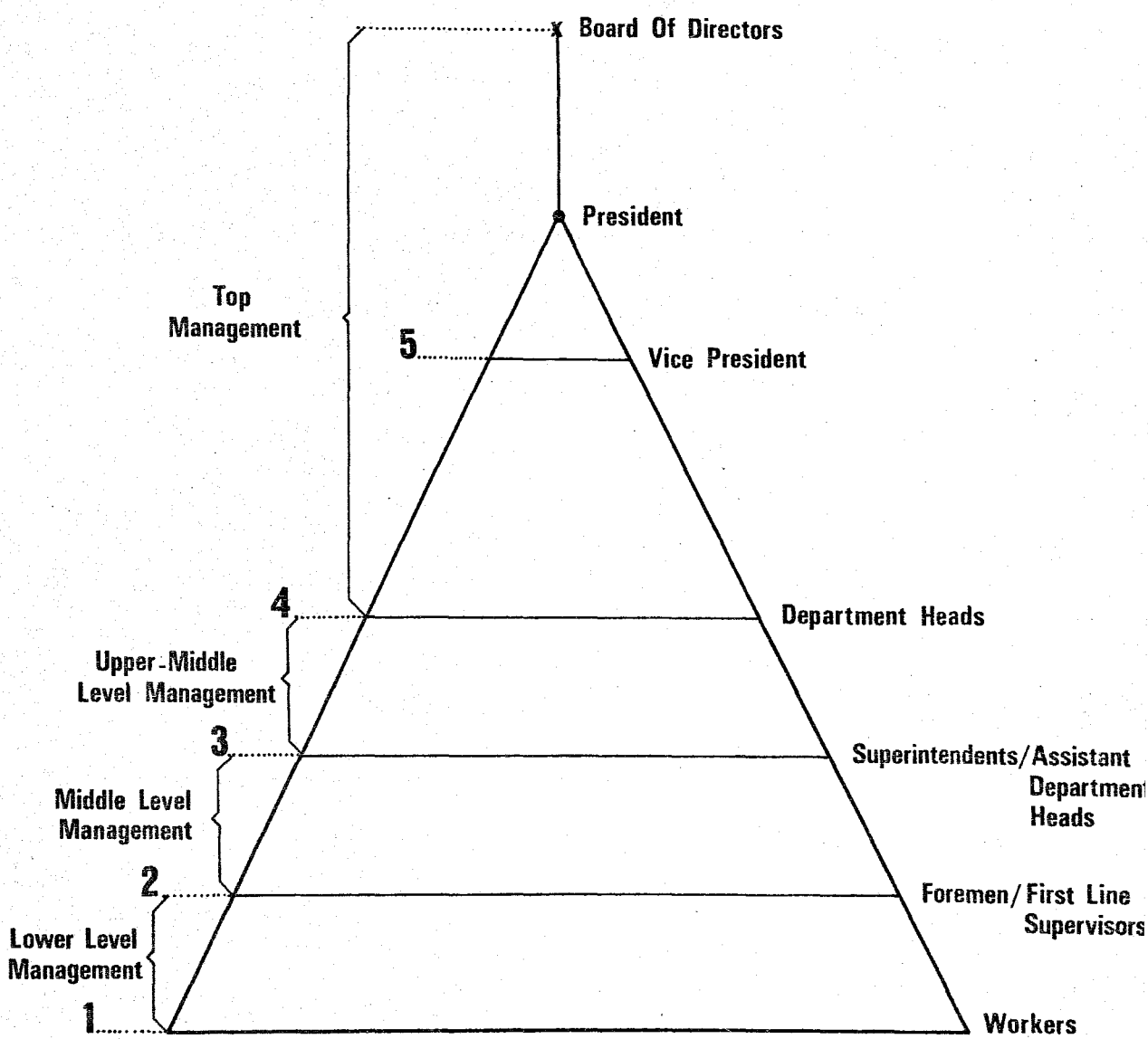
3.2. Sample Selection

The study was conducted in 27 work units of a large leather-garments producing company. The organization operates in the leather sector. It purchases lamb-skins as raw material and transforms them into leather garments. In the production process, the raw material - lamb skin - is cut manually in the production lines and processed into finished leather garments in the production ateliers. Technology is labor intensive in each production unit. The organization has three sales offices in Istanbul, one in Germany and one in the United States. Only Istanbul branches were included in the study.

Technological and structural characteristics of the organization can not be generalized for other organizational settings. An organization chart was developed for the purposes of the study. The chart was constructed by studying each unit's function and position in the organization and through gathering information from top level managers. The organization chart is presented in Appendix 1. The organization is divided into five hierarchical levels. Figure 3.1. presents the hierarchical levels in the organization.

Work units were classified according to their hierarchical levels and included in the study using two criteria. The first criterion was that each subordinate in the work unit report to a common supervisor based on the definition of the work unit that "a work unit includes the supervisor and all

– FIGURE: 3.1 Hierarchical Levels In The Organization



individuals reporting directly to the supervisor" (Van de Ven and Ferry, 1980:155).

The second criterion was that confining the study to lower and middle level units, second and third level units were included in the analysis. From the upper-middle level (fourth level), only those units were selected which do not have functional authority over the third and second level units.

The list of the work units included in the study is given in Appendix 2.

Top level managers and department heads from upper-middle level who have authority over the middle and lower levels were considered as external raters in the evaluation of the unit's performance.

Of 27 work units, there were three production lines, eight production ateliers, one production control unit, three quality control units, three production programming units, one production support unit, two purchasing units, three service units (shops), one product design unit, one personnel and accounting unit and one export-import-finance unit.

All units agreed to participate in the study. Respondents were lower level supervisors (foremen, first line supervisors), middle level supervisors (superintendent) and upper-middle level managers.

The characteristics of the 27 respondents are presented in Table 3.1.

TABLE 3.1. Characteristics of the Respondents

Position held in the organization	Foremen	: 30%
	First Line Supervisors	: 10%
	Middle Level Supervisors	: 30%
	Upper Middle Level Mngr.	: 30%
Sex	Female	: 48%
	Male	: 52%
Education Level	Primary School	:63%
	Bachelor's Degree	: 37%
Age	Under 30 years	: 48%
	30-40 years	: 45%
	Over 40 years	: 7%
Tenure in the organization	Less than 6 months	: 7%
	6 months - 2 years	: 30%
	3-5 years	: 26%
	6-10 years	: 33%
	More than 10 years	: 4%

3.3. Data Collection Procedure and the Instrument

Data of the study were collected through questionnaires. Supervisors from each work unit were brought together to complete the questionnaire in the presence of the researcher. The researcher was present in the questionnaire administration to answer any questions respondents might have. For two work units - Kadıköy and Osmanbey branch of the firm - the questionnaire was administered by a scheduled visit to each unit. The aim of the research was explained and the organization chart was presented to all respondents, to show their position on the chart. An identification code was given to each unit on the organization chart and written on the questionnaire

to identify the levels of the units. The questionnaire, a copy of which is presented in Appendix 3, was composed of a general introduction of the questionnaire, a definition of the work unit and general instructions related to the questionnaire administration. The questions were formulated by using common wording to all units. The rating scale was based on five-point Likert type scale. Respondents were asked to circle a number betwen one and five that indicated their degree of agreement with each item as a description of the work done in their unit.

In some questions, time frame varies between three and twelve months, since this time period is long enough to observe the existence of a repetitive cycle of activities. Approximately 30 percent of the items were reverse scored.

The first part of the questionnaire consists of questions related to the work activities performed by the unit. Questions considered all of the activities of the work unit, not the specific job activities.

The questions in the second part were related to the structure of the unit.

The third part of the questionnaire was formulated aiming to measure the performance of the work unit. In this part, some questions were asked to measure the degree of formalization and centralization exercised over unit in the evaluation of the unit performance. The last part consists of questions related to the tenure, age and sex of the respondents and the size of the unit, to have an idea about the characteristics of the respondents. The questionnaire contained 50 questions and took approximately 70 minutes to complete.

3.4. External Raters

Three top executives and two department heads were included as external raters in the data collection procedure. They were the president (general manager), vice president, managing director, manager of domestic sales and export manager. These persons are the major decision makers in the organization and are in a position to observe the units' performance. They were referred as external raters to decrease the subjectivity in the performance measurement. Questions related to the performance measurement of the unit were based on the subjective perception of the unit supervisors which were asked to rank their units relatively in comparison to other units on the criteria stated in the items. Aiming to increase the validity of the measurement, external raters were asked to rate these 27 work units according to their overall performance in the last year. A list of the work units were given to each rater and they were asked to rank the units on an A to C scale (A = good, B = average, C = poor/below the average). The rating form is presented in Appendix 4. Each rater completed the rating independently and questionnaire responses were not available to the raters. The responses of the external raters were used in a subsequent analysis, were not available to the units and kept confidential.

3.5. Measurement of Variables

In the analysis; technology, context and structure dimensions were considered as independent and performance - as the dimension of work unit effectiveness - as dependent variables.

3.5.1. Technology Dimensions

Task variability, task difficulty, task interdependence and job dependence among unit personnel were taken as technology dimensions. Task Variability is defined as the number of exceptions encountered in the characteristics of the work (Van de Ven and Delbecq, 1974; Van de Ven and Ferry, 1980). Task variability has also been measured as the routinization, repetitiveness of the work (Hage and Aiken, 1969). In the narrow sense, task variability is similar to the perceived uniformity and stability of raw materials.

Index of task variability was based on Van de Ven and Delbecq's (1974) and Van de Ven and Ferry's (1980) measures.

Respondents were requested to answer the questions on a five-point scale. Questions 1, 2, 4, 5 and 10, in the first part of the questionnaire, are related to task variability. Task variability was measured by adding the responses to these five items:

Item 1: Extent of the routineness of the work; adapted from the scale used by Van de Ven and Delbecq (1974), Daft and Macintosh (1981).

Item 2: Extent of following different steps (reverse scoring); (Van de Ven and Delbecq, 1974).

Item 4: Extent of the repetitive activities encountered in the work (reverse scoring); adapted from Van de Ven and Delbecq's (1974) scale.

Item 5: Variety in inputs (reverse scoring); (Van de Ven and Delbecq, 1974).

Item 10: Frequency of exceptions; (Van de Ven and Ferry, 1980).

Task Difficulty refers to the analyzability and predictability of the work (Van de Ven and Ferry, 1980). As quoted in Van de Ven and Delbecq's (1974) study, Perrow (1967) defined task difficulty as the degree of complexity of the search process in performing the task and the amount of thinking time required to solve work related problems.

Task difficulty construct was adopted from Van de Ven and Ferry's (1980) organization assessment instruments, in which the analyzability of work is defined as the clarity of knowing how to diagnose incoming work and select an appropriate method of dealing with it. The predictability of the work is defined as the ease with which one can determine in advance, the outcomes of a particular sequence of task steps. According to Daft and Macintosh (1981), when the work is analyzable, units can follow an objective, computational procedure to resolve problems. When work is unanalyzable, objective procedures can not be followed. Units have to spend time thinking about what to do, and they search for solutions beyond normal procedures.

Index of task difficulty was based on Van de Ven and Ferry's (1980), Van de Ven and Delbecq's (1974), Üsdiken's (1979), Daft and Macintosh's (1981) measures. Items 3, 6, 7, 8, 9, 11, 15 from the first part of the questionnaire are related to task difficulty.

High task difficulty means that the task is unanalyzable and unpredictable.

Items 3, 7, 8, 11, 15 are related to task analyzability:

Item 3: Existence of understandable sequence of steps to be followed; (Van de Ven and Delbecq, 1974).

Item 7: Frequency of problem; (Van de Ven and Ferry, 1980).

Item 8: Time spent to solve problems; (Van de Ven and Ferry, 1980).

Item 11: Similarity of problems; (Üsdiken, 1979).

Item 15: Relying on established procedures (reverse scoring); (Daft and Macintosh, 1981).

Items 6 and 9 are related to task predictability.

Item 6: Difficulty of knowing correctness of work (reverse scoring); (Van de Ven and Ferry, 1980).

Item 9: Degree of uncertainty in predicting work outcomes (reverse scoring); (Van de Ven and Ferry, 1980).

Task difficulty was computed by adding the resonses to the items.

In the study, task difficulty and task variability were viewed as two independent dimensions that do not overlap in meaning.

Task Interdependence is defined as the workflow interdependence within unit. "Workflows are materials or clients that are sent or transported between people and/or machines within organizational units" (Van de Ven and Ferry, 1980:402). Van de Ven and Ferry examined two dimensions of workflows, direction and amount. The direction of work flow is the order in which work moves from person to person within a unit. The amount of work flow is the relative quantity of work that is transferred between unit members. They stated that work interdependence between unit personnel can be determined by observing the work flows in 1) independent, 2) sequential, 3) reciprocal, or 4) team arrangements among unit personnel.

Task interdependence index was based on Van de Ven and Ferry's (1980) index. Item 16, in the first part of the questionnaire, is related to task interdependence measure. Based on the Guttmann scale mentioned in Van de Ven and Ferry's (1980) study, answers to the work flow cases were weighted by multiplying the supervisor's response to independent flow by zero, sequential flow by 0.33, reciprocal flow by 0.66 and team flow by 1 and then adding the products to obtain the overall work flow interdependence score. (Independent workflow is given zero weighting because it implies no interdependence among unit members).

Job dependence among unit personnel: Interdependence among unit personnel can also be reflected "in the extent to which they rely upon each other to receive their work, perform their individual tasks and send their completed work on to others to complete the total job" (Van de Ven and Ferry, 1980:157). Therefore, job dependence among unit personnel was also included as interdependence item in the questionnaire. According to Van de Ven and Ferry (1980), work flow interdependence provides only an indication of the work flow interconnectedness of unit personnel. It does not provide an indication of the intensity of dependence between the unit supervisor and subordinates and among unit members to do their jobs. Job dependence refers to how much each person's job depends upon the activities performed by the supervisor and other unit members.

Using Van de Ven and Ferry's (1980) construct, job dependence was measured at each cycle of work activity; input, transformation and output.

Items 12, 13, 14 are related to job dependence measure. Job dependence on supervisor was computed by adding following items in the questionnaire:

Item 12a): Job dependence on supervisor at the input cycle.

Item 13a): Job dependence on supervisor at the process cycle.

Item 14a): Job dependence on supervisor at the output cycle.

Job dependence among unit members was computed by adding following items in the questionnaire:

Item 12b): Job dependence among unit members at the input cycle.

Item 13b): Job dependence among unit members at the process cycle.

Item 14b): Job dependence among unit members at the output cycle.

3.5.2. Structural Dimensions

Role interchangeability (personnel specialization), personnel expertise, unit standardization, distribution of authority (centralization), employee job discretion and subordinates' participation were taken as dimensions of the unit structure.

Role Interchangeability (or Personnel Specialization): Unit specialization (number of job titles in a unit) is a measure of the division of labor within the unit. It does not indicate how specialized unit personnel are in performing the jobs. This dimension can be measured by role or job interchangeability. Role interchangeability or the converse, personnel specialization, means the degree to which A can perform B's job at short notice and B can perform A's job, even when A and B have different job titles or different functional assignments (Van de Ven and Ferry, 1980:164).

In a unit with high personnel specialization, job rotation is very difficult, because personnel roles are not interchangeable. In the present study, role interchangeability was considered as a structural dimension to measure the personnel specialization within the unit.

Role interchangeability scale was adapted from Van de Ven and Ferry's (1980) scale and Üsdiken's (1979) specialization items.

Role interchangeability was measured by adding the responses to the following items, which are in the second section of the questionnaire.

Item 1: Different job functions; (Üsdiken, 1979).

Item 2: Members perform the same tasks; (Van de Ven and Ferry, 1980).

Item 3: Members qualified in one another's jobs, (Van de Ven and Ferry, 1980).

Item 4: Ease of job rotation; (Van de Ven and Ferry, 1980).

Item 5: Frequency of job rotation; (Van de Ven and Ferry, 1980).

Expertise: Unit personnel expertise refers to the degree of professional skills of people in the unit (Van de Ven and Ferry, 1980:163). People most often obtain job skills from three basic sources: formal school education, job-entry training and/or on the job training and reading of materials necessary for maintaining and upgrading job skills.

The expertise index consists of four items and were based on

Üsdiken's (1979) measures. It was derived by adding the responses to the following items:

Item 6: Number of skilled persons within the unit;

Item 7: Percent of unit members which have Bachelor's degree;

Item 8: Outside training;

Item 9: Reading of materials.

Standardization: Unit standardization is defined as the extent to which rules, standard operating procedures and performance expectations are formalized and followed to coordinate, control and evaluate unit activities (Van de Ven and Ferry, 1980). Standardization index was adapted from Van de Ven and Ferry's (1980) and Üsdiken's (1979) study. It consists of the following items from the second and third part of the questionnaire.

Item 10: Preciseness of unit rules, policies, procedures; (Van de Ven and Ferry, 1980).

Item 11: Extent of violation of unit rules, policies, procedures (reverse scoring); (Van de Ven and Ferry, 1980).

Item 12: Strictness of rule enforcement (Van de Ven and Ferry, 1980).

Item 13: Percent of unit rules, procedures written out; (Van de Ven and Ferry, 1980).

Item 14: Extent standard rules followed; (Van de Ven and Ferry, 1980).

Item 15: Existence of written or unwritten procedures; (Van de Ven and Ferry, 1980).

Item 18: Extent administrative rules formalized (reverse scoring); (Üsdiken, 1979).

Item 19: Strictness of rule enforcement (reverse scoring); (Üsdiken, 1979).

Item 20: Strictness of rule violation (Üsdiken, 1979).

Items from the third part of the questionnaire:

Item 1: Clarity of knowing unit performance standards; (Van de Ven and Ferry, 1980).

Item 3: Degree of performance criteria quantified; (Van de Ven and Ferry, 1980).

Standardization index was computed by adding the responses to these items.

Distribution of Authority: Centralization refers to decision making authority within an organization. When most decisions are made hierarchically, an organizational unit is considered to be centralized; a decentralized unit implies that the major source of decision making has been delegated by managers to subordinates.

Van de Ven and Ferry (1980) argued that although centralization has often been measured as the degree of hierarchy of authority on work related decisions, a number of additional sources of decision making authority exists within organizations and their units. Once these alternative sources of decision authority are recognized, then decision authority by non-supervisory employees must be considered as unique dimension of centralization and not as simply the inverse of hierar-

chical authority.

Based on the broader perspective of centralization, Van de Ven and Ferry (1980) called it the distribution of unit authority among the unit supervisor (hierarchical authority), unit members (personal authority), unit supervisor and members as a group (collegial authority). Distribution of authority was measured using the organization assessment instrument indices developed by Van de Ven and Ferry (1980).

Supervisory authority was measured by adding the responses to the following items:

Items from the second part of the questionnaire:

Item 16b): Supervisor say on unit task.

Item 17b): Supervisor say on rules, procedures, policies.

Items from the third part:

Item 4b): Supervisor say on performance criteria.

Item 5c): Supervisor say on performance appraisal.

Unit employee authority was measured by the total of the following items:

Items from the second part:

Item 16c): Member say on unit task.

Item 17c): Member say on rules, procedures, policies.

Items from the third part:

Item 4c): Member say on performance criteria.

Item 5d): Member say on performance appraisal.

Unit collegial authority was the total of the following items:

Items from the second part:

Item 16d): Group say on unit tasks.

Item 17d): Group say on rules, policies, procedures.

Items from the third part:

Item 4d): Group say on performance criteria.

Item 5e): Group say on performance appraisal.

Employee job discretion: Employee decision making refers to amount of discretion unit members exercise in making work related decisions (Van de Ven and Ferry, 1980:165). This definition is different from unit employee authority, since it indicates how much say or influence the unit members have, in making job related decisions.

Employee job discretion was measured by the total of following items based on organization assessment instrument indices of Van de Ven and Ferry (1980).

Item 22a): Decide what tasks to perform;

Item 22b): Decide on work quotas and standards;

Item 22c): Decide on work rules and procedures;

Item 22d): Decide how to handle exceptions.

Participation: Overall participation of unit members was operationalized differently from unit employee authority and

employee job discretion measures. Participation items were developed as follows:

Item 21: Extent of participation in work related decisions (reverse scoring).

Item 23: Extent of participation in problem solving (reverse scoring).

Participation was measured by adding the responses to these items.

3.5.3. Context Measures

Size, external control over unit, dependence on other units were taken as context measures. Size was treated as contextual variable in this study. It was defined as the total number of unit personnel including the unit supervisor and was measured with the item stated in the fourth part of the questionnaire.

Item 2: Number of unit personnel.

External control (authority) over unit was a dimension of the distribution of authority. Van de Ven and Ferry (1980) defined it as the authority of staff or line positions outside of the organizational unit (functional authority). It was assumed as an important aspect of the control system and was considered as a contextual variable to explain variance in the structure and effectiveness.

External control over unit was measured using organization assessment instrument indices developed by Van de Ven and Ferry (1980).

External control over unit (functional and higher management) was the total of the following items in the second part of the questionnaire;

Item 16a): External authority over unit tasks.

Item 17a): External authority over unit rules, policies, procedures.

In the third part of the questionnaire:

Item 4a): External authority over unit performance criteria.

Item 5b): External authority over unit performance appraisal.

Dependence on other units, defined by Van de Ven and Ferry (1980) as the extent to which unit personnel perceive that the input, process and output of their work depend upon the activities performed in the other units. It refers to external relationship with other units. Dependence on other units was taken as a context measure and was assumed to affect unit structure and effectiveness. Using Van de Ven and Ferry's (1980) construct, job dependence was measured at each cycle of work activity; input, transformation, and output, and was computed by adding the responses to the following items in the first part of the questionnaire.

Item 12c): Input dependence on other units.

Item 13c): Process dependence on other units.

Item 14c): Output dependence on other units.

3.5.4. Effectiveness Measure

Performance was measured as a dimension of effectiveness. It was considered as a dependent variable which was assumed to be affected by technology, structure and context.

The performance of the units was measured by the construct developed by Van de Ven and Ferry (1980). The perceived unit performance index measures the degree to which the unit has achieved its performance targets and also measures the relative rating of the unit in comparison to other units (Van de Ven and Ferry, 1980:405). It is a subjective measure.

This study treated effectiveness as a unidimensional construct by summing the seven items of performance to arrive at an overall work group performance score.

Performance items are in the third part of the questionnaire and based on perceived unit performance index of Van de Ven and Ferry (1980).

Item 2: Percent of performance targets attained.

Item 6a): Unit rating on quantity of output.

Item 6b): Unit rating on quality of work.

Item 6c): Unit rating on innovativeness.

Item 6d): Unit rating on reputation for work excellence.

Item 6e): Unit rating on goal attainment.

Item 6f): Unit rating on morale.

This index is based on the subjective perceptions of unit supervisors on the performance of their own unit. To increase its validity, external raters were asked to rate the units based on their perception of the overall performance of the units.

Perceived unit performance index can be considered as valid if the unit ratings and external ratings match.

3.6. Method of Analysis

The methodology of the study consisted of nine steps.

Step 1: A complete list of variables was generated from the measures of the questionnaire. Some items were omitted in the formulation of variables. From distribution of authority index supervisory authority items were omitted with the aim to confine the measure of the distribution of authority to the items of unit employee and unit collegial authority.

Data from the items of job dependence on supervisor were not used because the dispersion of the job dependence on supervisor scores is nearly constant (Mean: 14.3, Standard deviation: 1.2, no. of items: 3, theoretical range: 3-15, actual range: 11-15).

Since the workflow interdependence is similar in the meaning to job dependence among unit members, only workflow interdependence was operationalized as task interdependence measure.

In the third part of the questionnaire, items 1 and 2 were omitted because two work units circled point one on the scale, meaning no targets for the performance. These two items were treated as missing value.

Step 2: Responses to the items were recorded on a sheet to obtain a score for each variable from each unit.

Step 3: Means, standard deviations and the range of the variables were calculated by hand to see the dispersion of the variables.

Table 3.2. presents mean, standard deviation and range values of the variables.

Step 4: Pearson product-moment correlation analysis was used to determine the technology-structure and context-structure relationship.

Partial correlation analysis was computed to find out the relationship between technology and structure, keeping external control dimension constant.

These analyses were computed by using a statistical handbook (Bruning and Kintz, 1977).

Step 5: A performance variable was constructed by adding the scores of unit performance ratings. Median of the performance variable was calculated to determine high and low performance units by ranking the performance scores of 27 work units.

Based on the definition, Median would equal the middle score of ratings after the scores had been rank ordered (Bruning and Kintz, 1977:3). Using the unit performance ratings, the median was found to be 23, the 14th score of the ratings.

The units which have scores less than 23 fall below the median and were considered as low performance units. Units with scores higher than 23 fall above the median and were called high performance units. The median was included in low performance level to have a good splitting of the data.

TABLE 3.2. Mean, Standard Deviation and Range Values of the Variables

Variables	No. of Items	Mean	Std.Dev.	Theor.Range Min.-Max.	Actual Range Min.-Max.
TECHNOLOGY					
1) Task Variability	5	12.74	3.63	5-25	7-19
2) Task Difficulty	7	13.88	2.80	7-35	9-21
3) Task Interdep.	1	3.165	1.049	1.99-9.95	1.99-6.29
STRUCTURE					
4) Role Interchan.	5	17.22	3.58	5-25	11-23
5) Expertise	4	7.00	1.79	4-20	5-12
6) Standardization	10	32.07	5.40	10-50	21-43
7) Unit Emp.Auth.	4	5.96	1.67	4-20	4-11
8) Unit Coll.Auth.	4	7.93	3.28	4-20	4-18
9) Job Discretion	4	9.66	3.15	4-20	4-15
10) Participation	2	5.15	1.58	2-10	2- 8
EFFECTIVENES					
11) Performance	6	23.66	3.23	6-30	19-29
CONTEXT					
12) Size	1	17.26	10.62	5-	5-39
13) External Control	4	15.00	3.45	4-20	5-20
14) Dependence	3	6.33	3.45	3-15	3-14

External raters were used to increase the validity of the perceived performance ratings of the units. They rated the units according to their overall performance and these ratings were used as objective measures of unit performance.

Five decision makers completed the ratings. The ratings of one external rater was not included because she could not evaluate the performance of 12 units out of 27. The other four raters used a scale between A = "good performance" and B = "average performance" and nobody gave a rate of C which means a "poor performance" to any unit.

Since there were no rates of C, ratings A and B were taken as high and low ratings respectively. The ratings of four decision makers were aggregated and an overall performance score was obtained for each unit by taking the average of the ratings.

In this way, units which had B values were rated as low performance units (14 units) and units with A values were rated as high performance units (13 units). By comparing the unit performance ratings with the ratings of external raters, it was aimed to increase the validity of unit performance ratings (subjective rating). Unit ratings results were matched with the ratings of external judges and it was found out that 20 workunits were rated on the same basis, whereas seven workunits had mismatch between the two ratings (three had mismatch at extreme point and four had mismatch around the median score).

This analysis showed that the objective performance ratings (external ratings) and the subjective performance ratings (unit ratings) were likely to give the same ranking in 20 out of 27 cases.

Therefore, it can be concluded that unit performance ratings are valid and can be used as dependent variable in subsequent analyses.

Step 6: Correlational analysis was conducted to study the effects of technology, structure and context on the work unit effectiveness. The analysis was based on Pearson Product-Moment Correlations and unit performance ratings were used as dependent variable.

Step 7: The main purpose of this study is to determine the impact of the technology-structure interaction on the work unit effectiveness. Therefore, a Fit Analysis was conducted to define the congruence between structure and technology.

Fit analysis consisted of fit between task variability and structure (FIT1), fit between task difficulty and structure (FIT2) and fit between task interdependence and structure (FIT3).

a) For the fit analysis, a mechanistic-organic score was calculated for each unit. The mechanistic-organic scale consisted of the structural variables determining mechanistic-organic characteristics of the units.

Mechanistic units are assumed to have high role interchangeability, low expertise, high standardization, low unit employee authority, low unit collegial authority, low job discretion and low participation, whereas the organic units have just the opposite - low role interchangeability, high expertise, low standardization, high unit employee - collegial authority, high job discretion and high participation.

For each scale, the structural variables were divided by the number of items to have a range between 1-5. To have a common

basis, for reverse scales, the scores obtained were subtracted from six and all scores were added to obtain an organicness score for each unit. High scores mean organic structure, whereas low scores indicate mechanistic structure.

b) Correlational analysis was performed to study the effects of organicness variable on work unit effectiveness.

c) Median of the organicness scores was calculated to determine mechanistic and organic units. Ranking of the organicness scores yield that the lowest score was 11.15 and the highest score 20.60. Median was found to be 15.55 and was included in lower level, since this score is nearer to lower level scores. Units with scores less than 15.55 were below the median and were considered as mechanistic units, whereas those with scores higher than median were considered as organic units.

d) For the fit analysis, the median of technological variables was calculated to determine the level of task difficulty, task variability and task interdependence of the work units.

e) Fit analysis between structure (organicness) and task variability was conducted by assuming that, when task variability is high, organicness should be high and there is a fit between task variability and organicness. The assumptions of this study for fit analysis between organicness and task variability are summarized in the table below.

Task Variability	Organicness	Fit
L	L	Yes
L	H	No
H	H	Yes
H	L	No

Depending on the assumptions above, fit analysis between the structure and technology was conducted for each unit.

The same procedure was repeated for the fit between task difficulty and structure, and between task interdependence and structure.

Step 8: Based on the contingency theory which states that effective work units have fit between their structure and technology, a Chi-square analysis was used to determine the relationship between fit and performance variable.

Step 9: In previous analysis, performance variable was considered unidimensional by summing six dimensions of performance. Since unit performance ratings (subjective measures) were considered as valid measure of performance, unit performance can be divided into its components and each component may be taken as a dimension of performance and considered as a dependent variable. The components of unit performance were quantity performance, quality performance, innovation, goal attainment, reputation for work excellence and morale of unit personnel.

From these components, "a priori" performance variables were computed as follows:

The quantity of work produced (item 6a in the questionnaire) and attainment of unit production goals (item 6e) were taken as "quantity dimension" of performance.

The quality of goods and services produced (item 6b) and reputation for work excellence (item 6d) were considered as "quality dimension" of performance.

The number of innovation or new ideas introduced by the unit (item 6c) were taken as "innovation dimension" and morale of unit personnel (item 6f) as "personnel satisfaction dimension" of performance.

These four dimensions of performance were treated as dependent variables and used in the Chi-square analysis to examine the relationship between technology-structure fit and each of them.

IV. RESULTS

4.1. Analysis of Technology, Context and Structure Relationship

The correlations within technology dimensions were studied to determine the degree of relationship between them. Table 4.1 shows the simple correlation (Pearson product moment correlation) coefficients between technology dimensions. Insignificant correlation was obtained between task difficulty and task interdependence.

Correlation between task variability and task difficulty was in the predicted direction but not statistically significant (Pearson product-moment correlation: r= 0.22). Therefore they were treated as independent of each other. There was no association between task variability and interdependence.

TABLE 4.1. Pearson Product-Moment Correlations Within Technology Dimensions

	Task Variability	Task Difficulty	Task Interdep.
Task Variability	-	+0.22	-0.03
Task Difficulty		-	+0.19
Task Interdependence			-

4.1.1. Technology and Structure Relationship

a. Simple Correlational Analysis Between Technology and Structure Dimensions

Simple correlation coefficients for technology and structure dimensions are shown in Table 4.2.

The correlation between task variability and role interchangeability was found to be negative as expected and it was close to the significance level ($r = -0.31$). As task variability increases, role interchangeability decreases. Work unit members do their job without changing their roles. This implies increase in personnel specialization.

Task variability correlated positively with employee job discretion in the expected manner. Since the correlation coefficient was found to be close to the significance level ($r = 0.32$), it makes sense to state that employees will exercise more discretion in making work-related decisions when task variability is high.

No association between task variability and expertise, unit employee authority, unit collegial authority, standardization and participation. The expectations that task variability would relate negatively to standardization and positively to authority dimensions were not confirmed.

Task difficulty was negatively correlated with authority dimensions. As task difficulty increases, unit collegial authority and unit employee authority both decrease significantly ($r = -0.35$, $r = -0.29$, $p<0.10$), implying that difficulties encountered in work activities were handled by supervisors. This was contrary to the expectation that task difficulty would correlate positively with unit employee and collegial authority.

TABLE 4.2. Pearson Product-Moment Correlations Between Technology and Structure Dimensions

TECHNOLOGY \ STRUCTURE	Role Interchangeability	Expertise	Standardization	Unit Employee Authority	Unit Collegial Authority	Job Discretion	Participation
Task Variability	-0.31	+0.08	+0.05	-0.00	-0.01	+0.32	+0.00
Task Difficulty	-0.31	-0.30	-0.16	-0.29	-0.35*	+0.16	-0.03
Task Interdependence	-0.12	-0.17	-0.08	+0.12	+0.22	-0.00	-0.02

* $p<0.1$: significant at 0.1 level.

Correlation between task difficulty and role interchangeability was in the predicted direction and found to be near the significance level. Consistent with Van de Ven and Ferry's (1980) findings, role interchangeability decreased when task difficulty was high, since personnel specialization was required to analyze the work. Correlation between task difficulty and expertise was near the significance level but in the opposite direction. This surprising finding is contrary to the assumption of Van de Ven and Delbecq (1974), which stated that task difficulty directly affects the amount of expertise in a unit.

Task difficulty and standardization correlated in expected direction but insignificantly. It makes sense to conclude that when work is unanalyzable and unpredictable, formalized rules and procedures are not followed.

According to Fry and Slocum (1984), under these conditions, management should implement a discretionary mode of control. Discretionary control consists of management's setting up repertoires of alternative plans for handling task difficulty, setting guidelines for exercising discretion in situations, and specifying expected levels of output quantity and quality. The discretionary mode is created by management for employees who are handling tasks that are complex, that require evaluation, search and judgement.

Positive correlation between task difficulty and employee job discretion was in predicted direction. Although it was insignificant, it supports the hypothesis of a correlation between task difficulty and standardization. When task difficulty is high, standardization is low and unit members exercise discretion in analyzing the work and apply appropriate means to perform it.

The expectation that unit employee and unit collegial

authority would be positively related to task interdependence was confirmed by the positive correlations. Although the correlations were insignificant, it makes sense to state that, increase in task interdependence associates with increase in unit employee and collegial authority exercised on work related decisions. This will lead to a more organic structure.

The correlation between task interdependence and expertise revealed an unexpected result. The earlier findings of Van de Ven and Ferry (1980) and the expectations that task interdependence would be positively correlated with expertise were not confirmed.

Task interdependence and role interchangeability correlated negatively as expected, but the correlation was insignificant. When task interdepenence within the unit is high, consultation and collaboration among members is required and role interchangeability decreases. In work units where tasks do not require interdependence (independent workflow), role interchangeability might be high (i.e. production lines and shops).

No association was found between task interdependence and, standardization and job discretion.

No correlation was found between task interdependence and participation, contrary to the findings of Hrebiniak and Mohr (1971).

As can be seen from the results, technology dimensions did not correlate with participation. These findings might be explained by assuming that, when task variability and difficulty were high, problems were solved by supervisors or higher functional management and the use of participation as a vehicle to solve problems lost its importance.

The lack of a strong relationship between technology and structure prompted the study to suggest that other variables may complicate the relationship between technology and structure.

b. Partial Correlation Analysis

Based on the previous studies (Hrebiniak, 1974; Pheysey et al., 1971), it was assumed that external control over unit as organizational control system might affect technology-structure relationship and lead the study to underestimate technology imperative. Therefore, partial correlation analysis was conducted to examine the relationship between technology and structure, keeping external control over unit constant; that is, taking its relational effect out of both variables.

Partial correlations resulting from this analysis are presented in Table 4.3.

Taking the relational effect of external control out of task variability and job discretion, correlation between these two variables reached the significance level ($r= 0.37$, $p<0.1$). Unit members exercised more discretion in making work-related decisions when task variability was high.

Authority dimensions were affected by task variability when external control was held constant. Unit employee and unit collegial authority were found to be positively related to task variability, as previously assumed.

As task variability increases, unit members or unit members and supervisor as a group handle the exceptional problems, and exercise authority in making work-related decisions.

Keeping external control constant, the relationship between task variability and role interchangeability did not change.

TABLE 4.3. Partial Correlations Between Technology and Structure Keeping External Control Constant

STRUCTURE / TECHNOLOGY	Role Interchangeability	Expertise	Standardization	Unit Employee Authority	Unit Collegial Authority	Job Discretion	Participation
Task Variability	-0.30	+0.09	-0.00	+0.15	+0.20	+0.37*	+0.024
Task Difficulty	-0.30	-0.30	-0.20	-0.25	-0.31	+0.18	-0.02
Task Interdependence	-0.16	-0.18	-0.03	-0.00	+0.07	-0.03	-0.047

* $p<0.1$: Significant at 0.1 level.

As task variability increased, role interchangeability decreased, implying increase in personnel specialization to handle exceptions encountered by the unit.

Results did not yield support for a strong relationship between task variability and expertise, standardization and participation (correlations were near zero), when external control was kept constant. Contrary to the expectations, external control was found to be ineffective on these relationships.

Taking the relational effects of external control out of task difficulty and structural dimensions did not yield significant results.

The expectation that expertise, authority dimensions -unit employee and unit collegial authority- and participation would be positively and significantly correlated with task difficulty was not confirmed by keeping external control dimension constant. It was found that external control did not have relational effect on task difficulty -role interchangeability, task difficulty- job discretion and task difficulty-standardization relationship; the results were found to be the same with simple correlation results for these relationships.

Keeping external control constant also did not yield support for the expected relationship between task interdependence and structure dimensions.

The surprising finding of a negative correlation between task interdependence and expertise could not be explained. Although it was expected that holding external control constant would affect this relation positively, support was not found.

Task interdependence was found to be unrelated with standardization, job discretion, participation and authority dimensions.

Task interdependence and role interchangeability partial correlations yielded the same results with simple correlations.

The results of Table 4.3. showed that elimination of external control over unit did not result in significant relationships between dimensions of technology and structure. Only the correlations between task variability and structural dimensions verified our expectations. Task variability and job discretion correlation was found to be significant, whereas the other correlations were insignificant but in the predicted direction for task variability and structure relationship.

Other technology dimensions did not seem to be related to the unit structure, since the correlations were insignificant and in opposite direction for many structure measures.

Results of Table 4.2. and 4.3. showed that technology had little effect on the design of the work unit structure. Depending on the results, it was assumed that contextual variables might affect the unit structure and explain the variance in the unit structure.

Therefore context and structure relationship was studied to determine the effects of contextual variables on the unit structure.

4.1.2. Context and Structure Relationship

Table 4.4. shows the simple correlations between context and structure dimensions.

TABLE 4.4. Pearson Product-Moment Correlations Between Context and Structure

STRUCTURE / CONTEXT	Role Interchangeability	Expertise	Standardization	Unit Employee Authority	Unit Collegial Authority	Job Discretion	Participation
Size	-0.25	+0.03	+0.46**	-0.22	-0.24	-0.52***	-0.06
External Control over Unit	-0.09	-0.00	+0.15	-0.36*	-0.47**	-0.07	-0.06
Dependence on Other Units	+0.25	+0.32	+0.19	-0.22	-0.16	+0.35*	-0.11

* Significant at 0.1 level
** Significant at 0.05 level
*** Significant at 0.01 level

The most striking finding was that standardization was more a function of size than of technology. The correlation between size and standardization was significant ($r = 0.46$, $p < 0.05$) and consistent with the findings of Aston group studies and Marsh and Mannari (1981). As the size of the units increased, more rules and regulations were set to coordinate and control the activities of the unit members. Size increased the need, as well as tendency to rely on formal and written rules.

Correlation between size and role interchangeability was near the significance level and in the predicted direction. Consistent with the findings of Marsh and Mannari (1981), Reimann (1980) and Aston group studies; as size increased, personnel specialization increased and role interchangeability became difficult, since job titles within the unit increased. Size affected specialization more strongly than task interdependence.

Based on the results of previous studies. it was expected that larger work units would be decentralized. But correlation between size and authority dimensions revealed a surprising result although correlation coefficients were insignificant. This finding indicated that as size increases, centralization increases within units meaning that supervisory authority increases to govern the behavior of employees. This is consistent with the results of Aston group studies in Canada, which showed a positive relationship between size and centralization.

Correlation between size and job discretion ($r = -0.52$ $p<0.01$) support the last finding that as size increases, job discretion decreases and centralization increases within the unit.

Supervisors use their discretion to coordinate and control work unit activities and respectively, subordinates' discre-

tion in work-related decisions decreases.

There were no associations between size and, expertise and participation.

The authority dimensions -unit employee and unit collegial authority- were negatively and significantly related to external control over unit as expected ($r= -0.36$, $p<0.1$ and $r= -0.47$, $p<0.05$). As external control over unit increased, unit employee authority and unit collegial authority decreased. This means increase in centralization at the organizational level. Top level management decides on work unit activities, operating rules and policies, and sets performance criteria for units. In the partial correlations calculations, correlation between task variability and external control over unit was found to be positive and significant ($r= 0.38$, $p<0.05$). This finding supported the fact that when task variability was high, exceptions were handled through consultation to top level management and unit employee/unit collegial authority decreased. Results showed that the group authority -unit collegial authority- was affected more.

Correlation between external control over unit and standardization was not significant but revealed support for the assumption that as centralization increases; formalization (i.e. bureaucratization) increases.

External control over unit did not have effects on the other structural variables -role interchangeability, expertise, job discretion and participation.

Correlation between dependence on other units and expertise was near the significance level and positive. In units which have high dependence on other units, the subordinates use their expertise to handle variety in inputs and information which were caused by inefficient performance of the supplier units.

Correlation between dependence on other units and job discretion was positive and significant ($r = 0.35$, $p<0.1$). It can be stated that as input, process or output dependence on other units increased, unit members used their discretion in deciding on work unit activities.

The correlation between dependence on other units and role interchangeability was found to be positive and near the significance level. It might imply that if unit dependence increases, role interchangeability increase will lead to facilitating of work unit activities.

Dependence on other units was negatively but insignificantly correlated with authority dimensions. This finding was consistent with the results of Reimann's (1980) study which states that decentralization of personnel decisions are a function of decreasing dependence. Unit employee authority and unit collegial authority decreased as dependence on other units increased, implying centralization in work related decisions, which is contrary to the findings of positive and significant correlation between dependence and job discretion.

Correlation between dependence on other units and standardization was insignificant but positive as consistent with the findings of Reimann (1980) and Marsh and Mannari (1981). Dependence requires more rules and policies to coordinate and control work activities if task is variable and difficult. Units with high dependence tended to be more formalized.

Although correlation between dependence on other units and participation was insignificant, it was the highest correlation coefficient obtained in the analysis of technology, context and structure relationship. No other contextual and technological variables yield such a high correlation coefficient with participation. This correlation implies that as dependence on other units increases, participation of unit

members decrease. There was no evidence in earlier studies for this relationship.

The results of technology, context and structure relationship showed that contextual variables had more significant correlations with structual variables than technology did. Tables 4.2, 4.3 and 4.4 clearly point out that the variance in the unit structure may be explained mostly due to contextual variables. The results yield little support for technology imperative and prompted the study to suggest that the hierarchical level of the units may complicate the relationship between technology and structure. Hierarchical levels existing in the organization were taken as mediating variable and a hierarchical level analysis was conducted to examine the technology, context, structure relationship at each level. It was expected that level analysis of technology-structure relationship would yield more significant results, by assuming that technology would have different effects on the unit structure, depending upon the level of units. Therefore, units were grouped according to their hierarchical levels and correlation betwen variables were studied in each group. It was expected that at lower levels, formalization and centralization would be a function of technology and at higher levels, specialization, expertise and job discretion would corelate with technology. Rank order correlation analysis was used to determine the relationship between technology and structure at each level.

4.2. Analysis by Hierarchical Level

4.2.1. Grouping of the Units

According to Figure 3.1. presented in Chapter III, second level units were taken as lower level, while third and fourth level units were taken as higher level units.

Second level units are ateliers and production lines where unit supervisors are foremen (units with ID codes: 021-0211, sample size= 11).

All units which have high number of job titles, high degree of interdependence among unit members and supervised by middle level managers were taken as third level units. These units are production support, production programming and quality control units.

All units which are supervised by upper middle level managers were taken as fourth level units. These are purchasing, production design, service, export-import finance and personnel accounting units.

Third and fourth level units do not have hierarchical dependence. They were considered as higher level units. (Units with ID codes: 031-038 and 041-048, sample size= 16).

4.2.2. Spearman Rank-Order Correlation Analysis for Lower and Higher Level Units

Tables 4.5 and 4.6 show Spearman rank-order correlation between technology-context-structure for lower and higher level units, respectively.

Results of these tables showed that task variability correlated with role interchangeability more strongly at higher level. This was due to the fact that higher level units have different job titles within the unit and role interchangeability is difficult. As expected, role interchangeability decreased more at the higher level implying increase in personnel specializatio, whereas task variability increased.

The expectation that task variability increase would associate

TABLE 4.5. Spearman Rank-Order Correlation Analysis for Lower Level Units

STRUCTURE	Role Interchangeability	Expertise	Standardization	Unit Employee Authority	Unit Collegial Authority	Job Discretion	Participation
TECHNOLOGY							
Task Variability	-0.13	+0.40	+0.22	+0.15	+0.37	+0.65**	-0.02
Task Difficulty	-0.06	-0.33	-0.02	-0.17	-0.31	+0.48	-0.27
Task Interdependence	-0.05	+0.35	+0.51	+0.34	+0.37	-0.06	+0.16
CONTEXT							
Size	-0.34	+0.46	+0.62**	+0.15	+0.33	-0.58*	-0.06
External Control over Unit	+0.13	+0.02	-0.34	-0.42	-0.57*	-0.03	-0.03
Dependence on Other Units	-0.14	+0.23	+0.06	+0.06	+0.39	+0.71**	-0.20

* Significant at 0.1 level
** Significant at 0.05 level

N= 11

TABLE 4.6. Spearman Rank-Order Correlation Analysis for Higher Level Units

STRUCTURE	Role Interchan-geability	Expertise	Standar-dization	Unit Employee Authority	Unit Collegial Authority	Job Dis-cretion	Partici-pation
TECHNOLOGY							
Task Variability	-0.40	-0.19	+0.08	+0.01	-0.07	-0.02	+0.10
Task Difficulty	-0.42	-0.15	-0.04	-0.16	-0.24	+0.14	+0.12
Task Inter-dependence	+0.01	+0.01	-0.31	+0.04	+0.24	+0.07	-0.09
CONTEXT							
Size	-0.38	-0.23	+0.12	-0.34	-0.18	-0.20	+0.16
External Control over Unit	-0.29	-0.18	+0.34	-0.27	-0.06	+0.07	-0.08
Dependence on Other Units	+0.16	+0.11	-0.09	-0.37	+0.06	+0.22	-0.01

N= 16

with the increase in expertise was confirmed at lower level ($r = 0.40$, near the significance level). Contrary to the expectations, at higher level, task variability correlated negatively and insignificantly with expertise. At lower level, it was positively but insignificantly correlated with standardization. No association was found between two variables at higher level. At lower level, task variability was found to be positively related to the authority dimensions and significantly correlated with job discretion ($r = 0.65$, $p<0.05$). This finding implied that lower level unit members would exercise more discretion in work related decisions when task variability was high.

Contrary to the expectations, at higher level units, task variability was not correlated with job discretion and authority dimensions.

Task difficulty and role interchangeability was correlated as expected at the higher level. Correlation coefficient was near the significance level implying that when task difficulty was high, role interchangeability was low and personnel specialization within the unit increased. At both levels, task difficulty and structure dimensions correlated insignificantly.

The striking finding was that, at lower level, task difficulty correlated with job discretion more strongly than it did at higher level. It was negatively correlated with expertise and authority dimension at both levels, contrary to the expectations.

At lower level, participation was negatively related to task difficulty, implying the centralization of decision making at lower level, consistent with the findings of negative correlation between task difficulty and unit employee/unit collegial authority. At higher level, task interdependence was

not found to be effective on structural dimensions like standardization and unit collegial authority. Correlations were in the predicted direction but insignificant.

At lower level, task interdependence was found to be more effective on the unit structure. Task interdependence was positively related to expertise at this level, confirming our expectations. Since interdependence was based on the material wokflow between subordinates and expertise implied subordinate's handskill in performing their jobs, a positive relationship between the two dimensions makes sense.

Standardization was strongly and positively related to task interdependence to coordinate high level workflow interdependence by setting more rules and procedures ($r = 0.51$; near the significance level). Authority dimensions yield positive results as expected.

Although it was assumed that at higher level, expertise and job discretion would correlate significantly and positively with technology dimensions, the results revealed support for this relationship at lower level. Consistent with expectations, lower level units were more formalized when task variability and interdependence were high.

Another striking finding was that lower level units were more decentralized than higher level units.

The results of context-structure relationship showed that, at the lower level, role interchangeability, expertise and standardization were more a function of size ($r = 0.62$, $p < 0.05$), than of technology. When the size of the unit increases; standardization increases significantly to coordinate and control the work activities of unit members. The same results was not confirmed at the higher level. A suprising finding was the negative relationship between size and

expertise at this level. Although size increase associated with a decrease in unit employee and collegial authority, the opposite result was found at lower level units, implying decentralization within the unit. But this finding did not explain the negative and significant correlation between size and job discretion ($r= -0.58$, $p<0.1$) at the lower level.

Although correlation was insignificant, participation correlated with size positively, implying that participation correlated with size positively, implying that participation is more a function of size than of technology at higher level.

External control over unit and standardization correlation yield a surprising finding at the lower level. Contrary to centralization theory, the variables were correlated negatively implying decrease in standardization as external control over unit increased.

The negative correlation between external control and authority dimensions were in the expected direction ($r= -0.57$, $p<0.1$; $r= -0.42$, insignificant). When external control was high, employee and collegial authority decreased significantly.

At the higher level, standardization was found to be affected more by external control than by technology, although correlation coefficient was insignificant.

External control did not have significant effects on role interchangeability, expertise, authority dimensions, job discretion and participation, contrary to expectations.

At the lower level, dependence on other units was positively and significantly correlated with job discretion ($r= 0.71$, $p<0.05$), implying that when dependence on other units was

high, unit members exercised more discretion in deciding how to handle exceptions and to diagnose the problems encountered in their work.

Also, correlation between dependence and unit collegial authority was found near the significance level, indicating that as dependence increased, unit supervisor and unit members as a group increased their authority on work related decisions. The same result was not obtained at higher level. When dependence on other units was high, unit employee authority wouldu decrease (r= -0.37, near significance level) and supervisor's authority would increase.

At the lower level, technology-structure and context structure relationships yield expected results, but because of small sample size (N=11) it may be concluded that most of the correlations did not reach significance level. Results showed that, at this level, contextual variables affected the structure of the work units more than technology.

No significant correlations were found between technology, context and structure dimensions at higher level. Role interchangeability was found to be a function of technology and standardization a function of external control over unit, although correlations were insignificant.

4.3. Fit Analysis

4.3.1. Correlational Analysis Between Technology, Context, Organicness and Performance Dimensions

Correlational analysis was conducted to examine the effects of technology, context and organicness variables on work unit performance.

Table 4.7 indicates that there were no significant correlations between technology dimensions and work unit performance. Only task variability and performance correlation was found to be close to the significance level, implying that when task variability is high, performance will increase, contrary to expectations.

Although contextual variables had insignificant correlations with performance, the relationships were in the predicted direction.

As size increased, performance also increased, implying that high number of unit personnel was associated with an increase in outputs.

Since external control over unit was effective in setting performance criteria, positive relationship between this variable and performance might be explained as, when performance targets set for the units were high, units tried to achieve these targets by performing more.

As expected, increase in dependence on other units associated wih a decrease in work unit performance. Since performance of the unit was affected by the outputs and performance of the other units, highly dependent units will be less effective when the supplier unit performed its work inefficiently.

There was no association between organicness and performance dimensions.

These findings showed that technology and organicness (structure) variables independently did not affect work unit performance, but it may be assumed that interactively they might explain variance in the performance.

TABLE 4.7. Pearson Product-Moment Correlations Between Technology, Context, Organicness and Performance Dimensions

	Performance (Unit Ratings)
Technology	
Task Variability	+0.28
Task Difficulty	+0.02
Task Interdep.	-0.08
Context	
Size	+0.17
External Control Over Unit	+0.11
Dependence on Other Units	-0.29
Structure	
Organicness	+0.09

4.3.2. Overall Fit Between Technology and Structure

Fit analysis was conducted to find out whether work units have structural characteristics appropriate to their level of technology.

a. Fit Analysis Between Task Variability and Organicness

The analysis was conducted by assuming that when task variability is high, organicness of the unit should be high and vice versa. This will lead to a fit between technology and structure. Results of the fit analysis (FIT1) between task variability and organicness (Table 4.8) showed that out of 27 units, only 15 units have fit between their structure and technology.

TABLE 4.8. Fit Analysis Between Task Variability and Organicness

UNIT CODE	TASK VARIABILITY	ORGANICNESS	FIT1
021	High	High	Yes
022	Low	High	No
023	Low	Low	Yes
024	High	Low	No
025	High	Low	No
026	Low	Low	Yes
027	Low	Low	Yes
028	Low	Low	Yes
029	High	Low	No
0210	High	High	Yes
0211	Low	Low	Yes
031	Low	Low	Yes
032	High	Low	No
033	High	High	Yes
034	Low	Low	Yes
035	High	Low	No
036	High	High	Yes
037	High	Low	No
038	Low	High	No
041	High	Low	No
042	High	High	Yes
043	High	High	Yes
044	Low	High	No
045	Low	High	No
046	Low	High	No
047	High	High	Yes
048	High	High	Yes

Ateliers were found to be mechanistic and had low task variability implying fit between their structure and task variability. An exceptional case, one atelier had fit between organic-structural characteristics and high task variability, and two ateliers showed no fit because their mechanistic

structures were not able to handle high task variability. Contrary to the expectations, one production line showed fit between its organic structure and high task variability.

Two of the selling units (shops) with high degree of organicness showed fit with their high level task variability. Export-Import-Finance and Accounting-Personnel units had organic structure because of high expertise and job autonomy within the units, but since their work unit activities were routine, they showed no fit. One purchasing unit faced with low task variability, showing no fit with its organic structure.

FIT1 analysis yielded the result that, among 27 units, fit between organicness and task variability reached to the level of 55 per cent (15/27).

b. Fit Analysis Between Task Difficulty and Organicness

Assuming that high task difficulty will lead to high organicness and low task difficulty associates with mechanistic structure, units were analyzed for the fit between their structure and technology.

Results of the fit analysis (FIT2), presented in Table 4.9, show that 14 units out of 27 have no fit. Ateliers which had mechanistic structure showed fit with their low level of task difficulty. Only two ateliers have organic structure, which was unexpected and only one showed fit with task difficulty. One production line and one quality control unit was found to be organic, contrary to the expectations and they did not have fit with their low level of task difficulty. Two production planning units had no fit.

Raw material purchasing unit was found to have low task difficulty, contrary to the expectation that a boundary spanning

unit would have high task uncertainty. This unit showed no fit with its highly organic structure.

TABLE 4.9. Fit Analysis Between Task Difficulty and Organicness

UNIT CODE	TASK DIFFICULTY	ORGANICNESS	FIT2
021	High	High	Yes
022	Low	High	No
023	High	Low	No
024	High	Low	No
025	Low	Low	Yes
026	Low	Low	Yes
027	Low	Low	Yes
028	High	Low	No
029	High	Low	No
0210	Low	High	No
0211	Low	How	Yes
031	High	Low	No
032	High	Low	No
033	Low	High	No
034	Low	Low	Yes
035	Low	Low	Yes
036	High	High	Yes
037	High	Low	No
038	Low	High	No
041	Low	Low	Yes
042	High	High	Yes
043	High	High	Yes
044	Low	High	No
045	Low	High	No
046	Low	High	No
047	High	High	Yes
048	High	High	Yes

Two selling units which have high task uncertainty had fit with their structures. This analysis has yielded a fit value of 48 percent (13/27).

c. Fit Analysis Between Task Interdependence and Organicness

FIT3 analysis was used to determine which work units have fit between their level of task interdependence and organicness. Results of the analysis are presented in Table 4.10. Twelve units out of 27 had fit between task interdependence and their structure design (FIT3= 44%).

At lower levels, there were mismatches between mechanistic structure and high task interdependence. In ateliers, task interdependence is high as a result of sequential workflow between unit members and it is inappropriate for mechanistic structure.

Selling and purchasing units have low task interdependence because of independent workflow between unit members and organic structure because of high degree of expertise and job autonomy. Therefore, in these units, fit did not exist.

From the results of the fit analysis, one can conclude that FIT1 has yielded the best result with a score of 55 per cent fit.

4.3.3. A Test of Contingency Theory: Relationship Between Technology-Structure Fit and Work Unit Effectiveness

Based on the statement of contingency theory that effective work units have structural characteristics appropriate to their level of technological complexity and that less effective units have a mismatch between technology and structure, Chi-square analysis was used to determine the relationship between technology-structure fit and work unit performance.

TABLE 4.10. Fit Analysis Between Task Interdependence and Organicness

UNIT CODE	TASK INTERDEPENDENCE	ORGANICNESS	FIT3
021	High	High	Yes
022	Low	High	No
023	Low	Low	Yes
024	High	Low	No
025	Low	Low	Yes
026	High	Low	No
027	High	Low	No
028	High	Low	No
029	Low	Low	Yes
0210	Low	High	No
0211	Low	Low	Yes
031	High	Low	No
032	High	Low	No
033	Low	High	No
034	Low	Low	Yes
035	Low	Low	Yes
036	High	High	Yes
037	High	Low	No
038	High	High	Yes
041	High	Low	No
042	Low	High	No
043	Low	High	No
044	High	High	Yes
045	High	High	Yes
046	Low	High	No
047	Low	High	No
048	High	High	Yes

Chi-square test results for the relationship between technology-structure fit and work unit performance are shown in Table 4.11.

TABLE 4.11. Chi-Square Tests for the Relationship Between Technology-Structure Fit and Work Unit Performance

FIT1: $\chi^2 = 6.75^{**}$
$\emptyset = 0.50$

10	5
2	10

FIT2: $\chi^2 = 2.97^{*}$
$\emptyset = 0.33$

8	5
4	10

FIT3: $\chi^2 = 1.08$
$\emptyset = 0.20$

4	8
8	7

Significance Levels:

* $p<0.1$

** $p<0.05$

Key:

FIT	Performance: High	Performance: Low
Yes		
No		

Relationship between FIT1 and performance was found to be strong and significant ($\chi^2 = 6.75$, $\emptyset = 0.50$, $p<0.01$),[1] confirming that work units rated high on performance have a fit between their level of task variability and structure, whereas units with low performance do not have fit.

FIT2 and performance of units were related at 0.1 significance level ($\chi^2 = 2.97$, $\emptyset = 0.33$).

This finding verified our expectations that work units which have fit between their level of task difficulty and structure are effective; units with no fit are less effective.

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[1] Chi-Square (χ^2): shows the significance of the relationship between the two variables.

Phi($\emptyset$): an indicator of the degree of relationship between the two variables.

Chi-square results for FIT3 and performance were not as expected. The two variables were found to be insignificantly related (χ^2= 1.08, $\emptyset$= 0.20).

Contrary to our expectations, units which had no fit were found to be effective and units with fit were rated as ineffective. But the assumption that less effective units have no fit between their task interdependence and structure has been verified by our findings.

Based on the results of Table 4.11, it can be concluded that performance was highly and significantly related to FIT1 and FIT2.

In the preceding analysis, performance variable was considered unidimensional. Dimensions of performance; namely, quantity, quality, innovation and personnel satisfaction may also be individually affected by technology-structure fit. Therefore, another chi-square analysis was conducted to determine the relationships between technology-structure fit and each of the performance dimensions.

Results of the analysis, as presented in Table 4.12, show that FIT1 was found to be significantly related to quantity performance (χ^2= 2.77, $p<0.1$, $\emptyset$= 0.32). This result implies that units which have high quantity performance (effective units) have fit between their level of task variability and structure. Less effective units (quantity performance low) had no fit.

Relationship between FIT2 and quantity performance was found to be highly significant (χ^2= 6.32, $p<0.05$, $\emptyset$= 0.48).

High quantity performance associated with the congruency between task difficulty and organicness.

TABLE 4.12. Chi-Square Tests for the Relationship Between Technology, Structure Fit and Performance Dimensions

	Quantity Performance			Quality Performance			Innovation			Personnel Satisfaction		
FIT1:	$\chi^2 = 2.77^*$	11	4	$\chi^2 = 4.32^{**}$	11	4	$\chi^2 = 1.50$	12	3	$\chi^2 = 1.54$	13	2
	$\phi = 0.32$	5	7	$\phi = 0.40$	4	8	$\phi = 0.23$	7	5	$\phi = 0.23$	8	4
FIT2:	$\chi^2 = 6.32^{**}$	11	2	$\chi^2 = 4.63^{**}$	10	3	$\chi^2 = 0.01$	9	4	$\chi^2 = 0.01$	10	3
	$\phi = 0.48$	5	9	$\phi = 0.41$	5	9	$\phi = 0.02$	10	4	$\phi = 0.02$	11	3
FIT3:	$\chi^2 = 0.77$	6	6	$\chi^2 = 0.067$	7	5	$\chi^2 = 8.53^{***}$	5	7	$\chi^2 = 0.09$	9	3
	$\phi = 0.17$	10	5	$\phi = 0.05$	8	7	$\phi = 0.56$	14	1	$\phi = 0.06$	12	3

Significance Levels:

* $p<0.1$

** $p<0.05$

*** $p<0.01$.

KEY:

FIT	Perf.Dimension: High	Perf.Dimension: Low
Yes		
No		

There was no relationship between FIT3 and quantity performance.

Consistent with our expectations, quantity performance was found to be a function of FIT1 and FIT2 like overall performance. The relation to FIT2 is higher than that to FIT1.

Quality performance variable was found to be highly related to FIT1 and FIT2 ($\chi^2 = 4.32$, $p<0.05$, $\emptyset = 0.40$; $\chi^2 = 4.63$, $p< 0.05$, $\emptyset = 0.41$, respectively), implying that units rated high on quality performance had fit between their level of task variability, task difficulty and their level of organicness. Low quality performance units were found to have no fit. No association was found between FIT3 and quality performance. Quality performance was more a function of FIT2.

Innovation dimension of performance was related to FIT3 significantly ($\chi^2 = 8.53$, $p<0.01$, $\emptyset = 0.56$), but in the unexpected direction. Units with high level of innovations were found to have mismatch betwen their task interdependence and structure. Relationships between FIT1, FIT2, FIT3 and personnel satisfaction were found to be insignificant.

To summarize, confirming our expectations, quality and quantity performance were found to be a highly related function of FIT1 and FIT2, whereas no relationship between innovation, personnel satisfaction dimensions and fit was encountered.

Since technological uncertainty -task variability and task difficulty- have effects on the quantity and quality of goods produced, units should conform their structures to the level of uncertainty in order to be effective.

V. CONCLUSIONS AND IMPLICATIONS

This study was conducted with the purpose of determining the relationship between technology, context and structure, and the impact of the fit between technology and structure on work unit effectiveness.

Our findings revealed little support for the effects of technology on work unit design.

Correlations between technology and structure were found to be insignificant.

Technology dimensions and expertise correlated negatively, showing inconsistency with the earlier studies.

It can be concluded that in this organization, expertise is based on handskill of the unit members, not on the educational background or training. All lower level unit members are qualified workers; this was supported by the findings that at lower level units, task variability and interdependence were positively correlated with expertise, implying that when task is variable or task interdependence is high, unit members' expertise is required to handle variability and to increase material workflow.

At higher level, expertise lost its significance. It was

found to be negatively correlated with technology dimensions.

It can be concluded that expertise items were not a good measure to reflect hand craft of the workers at lower level and specialization of the unit members at higher level units.

Technology dimensions correlated with role interchangeability in the expected direction. As technological uncertainty and task interdependence increased, unit members performed their job without changing their roles; personnel specialization within the unit increased to analyze the work activities; consultation and collaboration among unit members was needed to solve work unit problems.

Technological uncertainty led to increase in job discretion, decrease in standardization, implying that employees exercised more discretion in making work-related decisions, and formalized rules and procedures were not followed. But surprisingly, employee and collegial authority decreased significantly, supporting the final authority of supervisors on work units. Since the organization studied is a family corporation, centralization of decision making is high and participation in decision making becomes no more important. Indeed, there were no units in which employees have final authority in work unit activities and performance.

Participation was weakly correlated with technology even when external control over unit was held constant. This suggests that participation items were not well understood by respondents, although job discretion and unit employee authority yield high scores and significant results, participation had low scores and significant results, participation had low scores and correlation coefficients near zero.

Elimination of the effects of external control did not result in significant relationship between technology and structure.

Therefore variance in the structure may be explained by contextual factors.

Our findings support the Aston group findings in that, contextual factors such as size and dependence are more important predictors of organization structure than technology.

External control over unit and dependence on other units were used as contextual variables and differently conceptualized from the dependence and control variables of earlier studies.

These measures are new and not mentioned in the earlier studies as variables affecting technology-structure relationship at work unit level. These measureswere more significantly related to structure than technology.

The "family corporation" characteristic (major decision makers are owners of the company) enables external control to explain the variance in authority dimensions more than technology.

High degree of dependence on other units in all steps of production; input, process, and output, explains why the unit members use their discretion and expertise to handle exceptions caused by the supplier unit.

Size was found as the major indicator of the variance in standardization, job discretion and personnel specialization. It can be concluded that, as the unit size increases, supervisors set up more rules, use more discretion and authority to manage and control work activities. Increase in the number of job titles makes the role interchangeability within the unit more difficult. Lower level units were found to be more decentralized and more formalized. The basic reason is that, in that level, production ateliers and lines use their hand skill and knowledge to perform their jobs and their discre-

tion to handle job related problems. By performing the tasks, unit members follow written rules since their work is routine and jobs are described by foremen. Most of the workers are highly qualified and have work experiences which enable them to handle technological complexity and material workflow.

Since the lower level units are dependent on other units at all steps of production, contextual variables were found to have strong effect on unit structure. At that level, size directly affects the quantity and quality performance of the units and therefore units design their structure according to the unit size.

The findings that higher level units did not have significant relationship between their technology-context and structure may be explained by small sample size.

Our findings from Chi-square analysis support contingency theory in terms of structure-task variability and structure-task difficulty fit.

Overall workgroup effectiveness was found as a function of fit between structure-task variability and structure-task difficulty.

Since in fit analysis FIT1 results were the best, overall effectiveness related more to the fit between task variability and organicness.

Effective units conformed their structures to the level of task variability they encountered. Also contingency theory was confirmed by the significant findings obtained in the analysis of the relationship between fit and components of performance.

Quantity and quality components of performance were found to

be highly related to FIT1 and FIT2.

Since task difficulty and variability affects the quantity and quality of the goods and services produced, units should have structural characteristics appropriate to their level of task difficulty and variability in order to be effective.

Relation between task interdependence and structure did not yield expected results. Units which have no fit between task interdependence and organicness (high task interdependence and mechanistic structure) were found to be effective.

The basic reason for this is that FIT3 analysis did not give expected result. At lower level, because of sequential material workflow, work units are highly task interdependent and their structures are mechanistic. Although there is no fit between task interdependence and structure, most of the ateliers are effective in producing high quantity and quality output.

The same reason is applicable to the result of the relationship between innovation performance and task interdependence-structure fit.

From the results of the study, it can be concluded that technology and structure independently do not explain the variance in work unit effectiveness, but when interacted with each other, they significantly affect work unit effectiveness.

The use of a single organization limited the study to make generalization about technology, structure, context-effectiveness relationship. Some of the research findings do not confirm previous studies. The characteristics of the organization studied and the leather sector in which it operates; insignificant correlations because of small sample size, may be the reasons for the discrepancies between the findings of

this and previous studies.

Analyses were computed manually and relationships between variables were assumed to be linear. The validity of the items was not tested. Multiple regression analysis could not be used because of the unavailability of a computer. Simple Chi-square analysis was used to test contingency theory. Therefore the validity of the study is not so high.

Expertise of the unit members was measured in terms of educational background and job training items, not in terms of handskill and work experience. Since lower level units have skilled and highly qualified workers with a low level of education, expertise scores were not high enough to yield significant results in correlational analysis.

The study has implications and contributions to the organization studied, to the work units that participated and to further studies. An organization chart was developed for the study and each unit's level and supervisors' positions were defined. The organization chart will help the company for multiple purposes. Results of the study will be useful for major decision makers in terms of technology selection and structure design.

A deep understanding of technology-structure relationship at work unit level was obtained. Some interesting and surprising findings were encountered. The importance of external control over units and dependence on other units was verified.

A performance appraisal was made for the organization. Work unit supervisors had an opportunity for an evaluation and self appraisal of their units. They will be able to have a deep understanding of their unit structure and technology, when the results of the study are available to them. Using these results, attempts can be made to increase the perfor-

mance of the work units.

Measures of context-external control and dependence on other units were studied in the context-structure relationship and their effects on structure were found to be significant. These variables and rsults of the study may be used in further studies. The hierarchical level of analysis used in this study may contribute as methodology for other studies. A further study might be conducted by considering the effects of supervisory characteristics on work unit structure and effectiveness.

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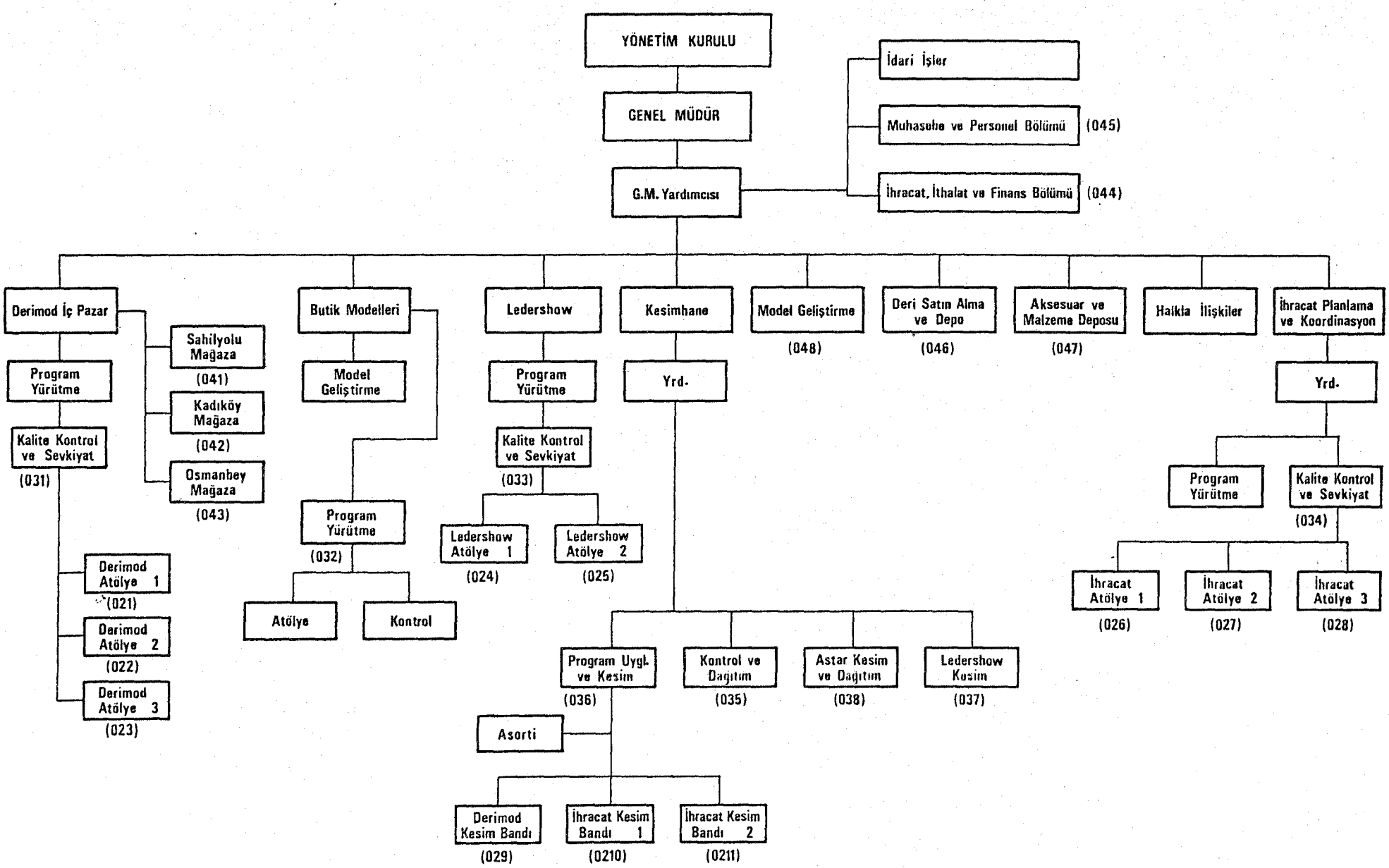
APPENDIX

APPENDIX 1: Organization Chart



APPENDIX 2: List of Work Units Included in the Study

Work Unit	Level	ID Code
Derimod Atölyesi I	2	021
Derimod Atölyesi II	2	022
Derimod Atölyesi III	2	023
Ledershow Atölyesi I	2	024
Ledershow Atölyesi II	2	025
İhracat Atölyesi I	2	026
İhracat Atölyesi II	2	027
İhracat Atölyesi III	2	028
Derimod Kesim Bandı	2	029
İhracat Kesim Bandı I	2	0210
İhracat Kesim Bandı II	2	0211
Derimod Kalite Kontrol ve Sevkiyat Bölümü	3	031
Butik Modelleri Program Yürütme Bölümü	3	032
Ledershow Kalite Kontrol ve Sevkiyat Bölümü	3	033
İhracat Kalite Kontrol ve Sevkiyat Bölümü	3	034
Kesim Kontrol ve Dağıtım Bölümü	3	035
Kesimhane Program Uygulama ve Asorti Bölümü	3	036
Ledershow Kesim ve Asorti Bölümü	3	037
Astar Kesim ve Dağıtım Bölümü	3	038
Sahilyolu Mağaza	4	041
Kadıköy Mağaza	4	042
Osmanbey Mağaza	4	043
İhracat, İthalat ve Finans Bölümü	4	044
Muhasebe ve Personel Bölümü	4	045
Deri Satın Alma ve Depo	4	046
Aksesuar ve Malzeme Deposu	4	047
Model Geliştirme Bölümü	4	048

APPENDIX 3: Questionnaire

Bu anket, iş ünitelerinin organizasyon yapıları ile ilgili bir lisansüstü tez çalışmasının araştırma bölümünü oluşturmaktadır. Anket, yönettiğiniz bölümde yürütülen işlerin nitelikleri, bölümünüzün yapısal özellikleri (organizasyonu) ve etkinliği hakkında bilgi edinmek amacıyla hazırlanmıştır.

Anket, sizin yönettiğiniz bölüm ve bölümünüzde çalışan elemanlar ile ilgili sorulardan oluşmaktadır. Anket sorularını cevaplandırırken aşağıdaki tanımlar size yardımcı olacaktır.

-Yönettiğiniz bölüm, sizi (bölüm yöneticisini) ve size doğrudan sorumlu olan elemanlarınızı kapsamaktadır.

-Bölüm elemanları, bölümünüzde sizin dışınızda çalışan kişilerden oluşmaktadır.

Ankette yer alan soruları cevaplandırırken, kendi görüşünüzle gerçeğe en yakın olduğuna inandığınız cevap seçeneğini işaretleyiniz. Cevaplarınızın, olması gerekeni değil, varolan durumu yansıtması beklenmektedir.

Anket soruları anlaşılır olmayabilir, soruların içeriği anlaşılır durumda olmadığı zaman lütfen yardım isteyiniz.

Tamamlanmamış anketler verilerin analizinde güçlük yarattığından lütfen soruların tümünü cevaplandırınız. Herhangi bir soruda, verilen cevap kategorilerinden birini işaretledikten sonra bir ek görüşe yer vermek gereğini duyuyorsanız, sorunun yanına not edebilirsiniz.

Verdiğiniz bilgiler kesinlikle saklı tutulacak ve araştırmaya dahil edilen tüm bölümlerden elde edilen bilgilerin analizi sonucunda (hiçbir bölümün sağladığı bilgilerin ayırdedilemeyeceği şekilde ve bölüm adları hiçbir şekilde belirtilmeden) sadece toplu bulgular olarak açıklanacaktır. Araştırmadan elde edilen başlıca bulgular katılan bölümlere iletilecektir.

Katkınız ve gösterdiğiniz ilgi için teşekkür ederim.

Esra Durgut

BÖLÜM -I-

Aşağıdaki sorular yönettiğiniz bölümde yapılan işlerin ve yürütülen faaliyetlerin özellikleri ile ilgilidir. Amaç, bölüm yöneticisinin veya bölümdeki herbir elemanın tek tek görevlerinin özellikleri değil, bölümünüzde gerçekleştirilen faaliyetler veişler bütününün özellikleri hakkında bilgi edinmektir. Bu nedenle lütfen soruları bölümünüzde yapılan işlerin tümünü gözönünde bulundurarak cevaplandırınız.

1.Her işin rutin ve yeknesak (monoton) yönleri vardır. Bölümünüzde yapılan işlerin ne kadarı rutin ve yeknesak olarak nitelendirilebilir?

☐ hemen hemen tümü ☐ çoğu ☐ yaklaşık yarısı ☐ bazıları ☐ hemen hemen hiçbiri

2.Bazı işlerin yapılması çok sayıda değişik yöntem ve tekniklerden yararlanmayı gerektirir. Bazılarında ise hemen hemen sürekli aynı teknik veya yöntemlerden yararlanılır. Bölümünüzde yapılan işlerin ne kadarında kullanılan yöntem ve teknikler bir günden diğerine veya olaydan olaya büyük ölçüde farklılıklar gösterir?

☐ hemen hemen tümünde ☐ çoğunda ☐ yaklaşık yarısında ☐ bazılarında ☐ hemen hemen hiçbirinde

3.Bölümünüzde işlerin yapılması sırasında takip edilebilecek anlaşılır ve açıkça tanımlanmış yöntem ve teknikler ne ölçüde vardır?

☐ büyük ölçüde ☐ oldukça ☐ bir ölçüde ☐ sınırlı ölçüde ☐ hemen hemen hiç

4.Bölümünüzün faaliyeti ne ölçüde aynı işi aynı şekilde yapmak olarak nitelendirilebilir?

☐ hemen hemen hiç ☐ sınırlı ölçüde ☐ bir ölçüde ☐ oldukça ☐ büyük ölçüde

5. Bölümünüzde yapılan işler veya üzerinde çalışılan olay veya malzemeler günden güne veya olaydan olaya ne ölçüde farklılıklar gösterir?

☐ büyük ölçüde ☐ oldukça ☐ bir ölçüde ☐ sınırlı ölçüde ☐ hemen hemen hiç

6. Bölümünüzde yapılan işlerin doğru olduğunu ne kadar kolaylıkla tahmin edebilirsiniz?

☐ çok zor ☐ oldukça zor ☐ biraz kolay ☐ oldukça kolay ☐ çok kolay

7. Son üç ay boyunca, bölümünüzde ne kadar sık anında(hemen) çözülemeyecek güç sorunlarla karşılaşıldı?

☐ haftada 1 ya da daha az ☐ yaklaşık haftada 2-4 kere ☐ yaklaşık günde 1 kere ☐ yaklaşık günde 2-4 kere ☐ günde 5 kere ya da daha fazla

8. Bu tür güç sorunların çözülmesi için, ne kadarlık bir zaman süresinde düşünülmesi ve çalışma yapılması gerekti?

☐ haftada 1 saatten az ☐ yaklaşık haftada 1-4 saat ☐ yaklaşık günde 1 saat ☐ yaklaşık günde 2-3 saat ☐ günde 4 saat ya da daha fazla

9. Bölümünüzde yürütülen çabaların muhtemel sonuçlarının ne olacağından ne kadar emin olabilirsiniz?

☐ % 40 veya daha az ☐ % 41-60 ☐ % 61-75 ☐ % 76-90 ☐ % 91 veya daha fazla

10. Ortalama bir hafta boyunca, bölümünüzde faaliyetlerin yürütülmesi sırasında ne kadar sık hiç beklenmedik olaylarla karşılaşılır?

☐ çok nadir ☐ arada sırada ☐ oldukça sık ☐ çok sık ☐ devamlı

11.Bölümünüzün faaliyetlerinin yürütülmesi sırasında ne ölçüde aynı tip sorunlarla karşılaşılır?

☐ hemen hemen her zaman ☐ genellikle ☐ bazen ☐ nadiren ☐ hemen hemen hiç

12.Bölümünüzde çalışanlar, iş yapabilmeleri için gerekli olan bilgi ve malzeme gereksinimlerini elde etmek için aşağıdaki kişilere ne kadar bağımlıdır?

	hemen hemen hiç	çok az	biraz	oldukça	tamamen
a).Bölüm yöneticisi olarak size?	1	2	3	4	5
b).Bölümde çalışan diğer elemanlara?	1	2	3	4	5
c)Bölümünüz dışında çalışanlara?	1	2	3	4	5

13.Bölümünüzde çalışanlar görevlerini yerine getirirken aşağıdaki kişilere ne kadar bağımlıdır?

a).Bölüm yöneticisi olarak size?	1	2	3	4	5
b).Bölümde çalışan diğer elemanlara?	1	2	3	4	5
c).Bölümünüz dışında çalışanlara?	1	2	3	4	5

14.Bölümünüzde çalışanlar işin kendilerine düşen kısmını bitirdikten sonra, tüm işin ya da servisin tamamlanmasından önce, iş akış sırasına göre bir sonraki göreve başlarken aşağıdaki kişilere ne kadar bağımlıdır?

	hemen hemen hiç	çok az	biraz	oldukça	tamamen
a).Bölüm yöneticisi olarak size?	1	2	3	4	5
b).Bölümde çalışan diğer elemanlara?	1	2	3	4	5
c).Bölümünüz dışında çalışanlara?	1	2	3	4	5

15.Bölümünüzdeki işlerin yapılabilmesi için varolan yöntem ve tekniklerden ne ölçüde faydalanılabilinir?

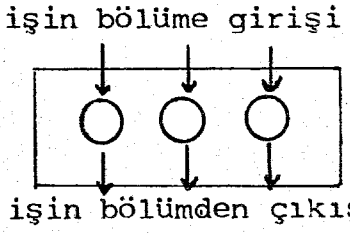
☐ hemen hemen hiç ☐ sınırlı ölçüde ☐ bir ölçüde ☐ oldukça ☐ büyük ölçüde

Aşağıdaki soru, bölümünüzde çalışanlar arasında bölüm içindeki iş akış şekilleri ile ilgilidir. Bölümünüzde yapılan işlerin elemanlarınız arasındaki akışı, aşağıda tanımlanan ve çizilen dört şema ile temsil edilebilir. (Bölüm yöneticisi olarak kendinizi şekillerde çizilen dairelerin dışında tutmalısınız; daireler bölümde çalışan elemanları temsil etmektedir.)

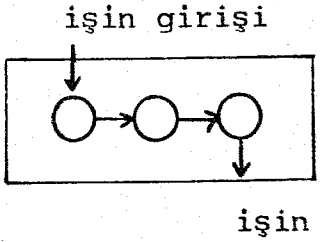
16.Bölümünüzde yapılan işlerin ne kadarının elemanlarınız arasında aşağıda tanımlanan iş akış şemalarına uygun olarak aktığını belirtiniz?

İşin ne kadarı bölüm elemanları arasında aşağıda gösterildiği biçimde akmaktadır?

	Hemen hemen işin hiç bir kısmı	Birazı	Yaklaşık işin % 50'si	Çoğu	Hemen hemen işin tamamı
a)."Bağımsız İş Akışı", bölümünüzdeki işler elemanlarınız tarafından tek başlarına yerine getirilmektedir ve elemanlar arasında bir iş akışı yoktur?	1	2	3	4	5

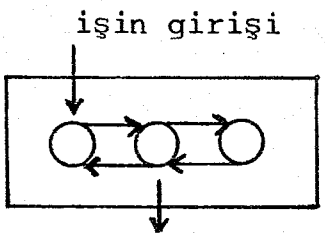


b)."Sıralı İş Akışı", bölümünüzdeki işler elemanlarınız arasında ve tek bir yönde akmaktadır?	1	2	3	4	5

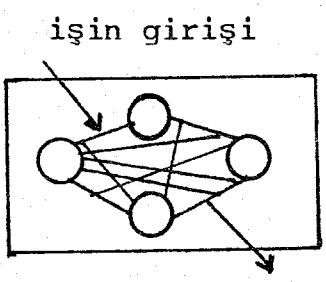


İşin ne kadarı bölüm elemanları arasında aşağıda gösterildiği biçimde akmaktadır?

	Hemen hemen işin hiç bir kısmı	Birazı	Yaklaşık işin % 50'si	Çoğu	Hemen hemen işin tamamı
c)."Karşılıklı İş Akışı"; Bölümünüzdeki işler elemanlarınız arasında karşılıklı olarak akmaktadır?	1	2	3	4	5



d)."Grup İş Akışı", Bölüm elemanları biraraya gelerek,ortaya çıkan problemleri teşhis etmek ve çözmek için grup halinde hareket ederek işlerin aynı zamanda yapılmasını sağlarlar?	1	2	3	4	5



BÖLÜM - II -

Aşağıdaki sorular, yönettiğiniz bölümün yapısal özellikleri (Organizasyonu) ile ilgilidir. Soruları, bölümünüzü bir bütün olarak ele alıp cevaplandırınız.

1.Bölümünüzdeki elemanların görevleri birbirlerinden ne ölçüde farklıdır?

☐ büyük ölçüde farklı ☐ oldukça farklı ☐ bir ölçüde farklı ☐ az farklı ☐ hemen hemen hiç farklı değil

2.Son üç ay boyunca, bölümünüzdeki elemanların ne kadarı aynı işi yaptılar, ya da herbiri farklı görevi yerine getirdi?

☐ hiçbiri aynı işi yapmadı ☐ sadece birkaçı aynı işi yaptı ☐ yaklaşık yarısı aynı işi yaptı ☐ çoğu aynı işi yaptı ☐ hepsi aynı işi yaptı

3.Bölüm elemanlarınızın ne kadarı diğer bir elemanın işini yapabilecek kapasitededir?

☐ hiçbiri ☐ sadece birkaçı ☐ yaklaşık yarısı ☐ çoğu ☐ hepsi

4.Bölümünüzde çalışan elemanları ne kadar kolaylıkla rotasyona tabi tutabilirsiniz ki, herbiri diğerinin işini rahatlıkla yapabilsin?

☐ çok zor, hemen hemen tüm elemanların uzun bir eğitime ihtiyacı olurdu ☐ oldukça zor,bazı elemanların uzun bir eğitime ihtiyacı olurdu ☐ biraz zor, elemanların birazının eğitime ihtiyacı olurdu ☐ oldukça kolay, bazı elemanların kısa bir eğitime ihtiyacı olurdu ☐ çok kolay, elemanların hiçbirinin eğitime ihtiyacı olmazdı

5.Son üç ay boyunca, elemanlarınız ne kadar sık rotasyona girerek birbirlerinin işlerini yaptılar?

☐ hiç bir zaman ☐ yaklaşık her ay ☐ yaklaşık her hafta ☐ yaklaşık her gün ☐ yaklaşık her saat

6.Bölümünüzde çalışanların ne kadarını kendi alanlarında uzman kişiler olarak tanımlamak mümkündür?

☐ hemen hemen tümünü ☐ çoğunu ☐ yaklaşık yarısını ☐ bazılarını ☐ hemen hemen hiçbirini

7.Bölümünüzde çalışanların yaklaşık yüzde kaçı yaptıkları işle doğrudan ilgili yüksek öğrenim görmüşlerdir?

☐ % 0-20 ☐ % 21-40 ☐ % 41-60 ☐ % 61-80 ☐ % 81-100

8.Bölümünüzde çalışanların ne kadarı işe girdiklerinden bu yana iş dışında en az bir kez uzun süreli eğitim programına katılmışlardır?

☐ hemen hemen tümü ☐ çoğu ☐ yaklaşık yarısı ☐ bazıları ☐ hemen hemen hiçbiri

9.Bölümünüzde çalışanların ne kadarı yaptıkları işle ilgili mesleki yayınları (kitap,dergi,vs.) sürekli olarak izlemektedirler?

☐ hemen hemen hiçbiri ☐ bazıları ☐ yaklaşık yarısı ☐ çoğu ☐ hemen hemen tümü

10.Bölümünüzdeki kural ve yöntemler iş faaliyetlerinin nasıl koordine ve kontrol edileceğini ne ölçüde kesin olarak belirlemişlerdir?

☐ çok genel ☐ oldukça genel ☐ biraz kesin ☐ oldukça kesin ☐ çok kesin

11. Son üç ay boyunca, bölüm elemanları bu iş kural ve yöntemlerini ne kadar sık ihlal ettiler?

☐ hiç bir zaman ☐ çok nadir ☐ arada sırada ☐ çok sık ☐ her zaman

12. Bölümünüzde bu iş kurallarına uyulması için ne ölçüde sıkı bir kontrol uygulanmaktadır?

☐ hiç bir kontrol yoktur ☐ çok az bir kontrol vardır ☐ biraz sıkı bir kontrol vardır ☐ oldukça sıkı bir kontrol vardır ☐ çok sıkı bir kontrol vardır

13. Bu iş kurallarının ve yöntemlerinin ne kadarı yazılı olarak bulunmaktadır?

☐ % 0-20 ☐ % 21-40 ☐ % 41-60 ☐ % 61-80 ☐ % 80-100

14. Bölümünüzdeki elemanlar işlerini yaparlarken bölümünüz için konmuş standardlara ne ölçüde uyarlar ?

☐ hemen hemen hiç ☐ sınırlı ölçüde ☐ bir ölçüde ☐ oldukça ☐ büyük ölçüde

15. Bölümünüzdeki faaliyetler sırasında ortaya çıkan beklenmedik olaylara çözüm bulabilmek için elemanlarınızın kullanabileceği yazılı yada yazısız yöntemler ne oranda mevcuttur?

☐ % 0-20 ☐ % 21-40 ☐ % 41-60 ☐ % 61-80 ☐ % 81-100

16.Bölümünüzde hangi iş ve faaliyetlerin yapılacağına karar vermede aşağıdaki kişiler ne ölçüde etki ve söz sahibidir?

	Bölüm işlerine karar vermede etkinlik oranı				
	hiç	çok az	biraz	oldukça	çok
a).Bölümünüz dışında sizinle ilişkide olan kişiler?	1	2	3	4	5
b).Bölüm yöneticisi olarak siz?	1	2	3	4	5
c).Bölüm elemanları? (Ferdi olarak)	1	2	3	4	5
d).Siz ve elemanlarınız bir grup olarak?	1	2	3	4	5

17.Bölümünüzün faaliyetlerini koordine ve kontrol etmede kullanılacak kural ve yöntemleri saptamada aşağıdaki kişiler ne ölçüde etki ve söz sahibidir?

	Kuralları saptamada etkinlik oranı				
	hiç	çok az	biraz	oldukça	çok
a).Bölümünüz dışında sizinle ilişkide olan kişiler?	1	2	3	4	5
b).Bölüm yöneticisi olarak siz?	1	2	3	4	5
c).Bölüm elemanları? (Ferdi olarak)	1	2	3	4	5
d).Siz ve elemanlarınız bir grup olarak ?	1	2	3	4	5

18. Elemanlarınızın iş ortamındaki davranışları ve işletme ile ilişkileri (işe başlama ve çıkış saatleri, izin alma, terfi vs.) ne ölçüde yazılı kurallarla belirlenmiştir?

☐ hemen hemen tümüyle yazılı ☐ çoğu kurallar yazılı ☐ kurallar kısmen yazılı ☐ az sayıda kural yazılı ☐ hemen hemen hiç yazılı kural yok

19. Kuralların dışına çıkılmaması ne ölçüde sıkı denetlenir?

☐ çok sıkı denetlenir ☐ sıkı ☐ bir ölçüde sıkı ☐ sıkı değil ☐ hemen hemen hiç denetlenmez

20. Kurallara uymamanın cezası ne ölçüde kesin ve yazılı olarak belirlenmiştir?

☐ hemen hemen hiç ☐ sınırlı ölçüde ☐ bir ölçüde ☐ oldukça ☐ büyük ölçüde

21. Bölümünüzde çalışan elemanlar işleri ile ilgili kararlara ne ölçüde katılırlar?

☐ büyük ölçüde ☐ oldukça ☐ kısmen ☐ sınırlı ölçüde ☐ hemen hemen hiç

22. Bölümünüzdeki elemanlar aşağıda belirtilen kendi işleri ile ilgili kararlarda ne ölçüde otorite sahibidirler?

	Bölüm elemanlarının karar vermede sahip oldukları otorite				
	hiç	çok az	biraz	oldukça	çok
a).Gündelik faaliyetler içinde hangi işi yapacaklarını belirlemede?	1	2	3	4	5
b).Kendi iş amaçlarını (ne kadar işi ne sürede yapacaklarını) belirlemede?	1	2	3	4	5
c).İşlerini nasıl yapacaklarını belirleyen kural ve yöntemleri ortaya getirme ve kullanmada?	1	2	3	4	5
d).Karşılaştıkları sorunların çözümünü saptamada?	1	2	3	4	5

23. Ortaya çıkan iş sorunlarını çözmek için bölümünüzde çalışan elemanların fikir ve önerilerinden ne ölçüde yararlanılır?

☐ büyük ölçüde ☐ oldukça ☐ kısmen ☐ sınırlı ölçüde ☐ hemen hemen hiç

BÖLÜM -III-

Aşağıdaki sorular, yönettiğiniz bölümün performans ve etkinliği ile ilgilidir. Cevaplarınızın, olmasını arzuladığınız durumu değil, halen uygulamada geçerli olan durumu yansıtması beklenmektedir.

1. Bölümünüzün performans hedefleri ne ölçüde açık olarak tanımlanmıştır?

☐ hiç hedef tanımlanmamıştır ☐ hedefler hiç açık değildir ☐ hedefler biraz açıktır ☐ hedefler oldukça açıktır ☐ hedefler çok açık tanımlanmıştır

2. Bölümünüz için saptanan performans hedefleri bu yıl yaklaşık yüzde kaç oranında gerçekleştirildi?

☐ hiçbir hedef yoktu ☐ % 0-30 ☐ % 31-60 ☐ % 61-100 ☐ % 100'den fazla

3. Bölümünüzün performansını ölçmek için ne ölçüde sayısal teknikler kullanılır?

☐ hiçbir ölçme yapılmaz ☐ sadece intiba ve yorumlarla ölçülür (subjektif olarak) ☐ yetersiz fakat sayısal tekniklerle ölçülür ☐ oldukça ayrıntılı ve sayısal tekniklerle ölçülür ☐ çok ayrıntılı ve sayısal tekniklerle ölçülür

4. Bölümünüzün performansını değerlendirecek kriterleri saptamada aşağıdaki kişiler ne ölçüde etki ve söz sahibidir?

	Kriter saptamada etkinlik oranı				
	hiç	çok az	biraz	oldukça	çok
a). Bölümünüz dışında sizinle ilişkide olan kişiler ?	1	2	3	4	5

	Kriter Saptamada Etkinlik oranı				
	hiç	çok az	biraz	oldukça	çok
b).Bölüm yöneticisi olarak siz?	1	2	3	4	5
c).Bölüm elemanları (Ferdi olarak)?	1	2	3	4	5
d). Siz ve elemanlarınız bir grup olarak ?	1	2	3	4	5

5.Bölümünüzün performansını değerlendirmede aşağıdaki değerlendirme metodları ne derece kullanılır?	Değerlendirmede kullanma oranı				
	hiç	çok az	biraz	oldukça	çok
a).Otomotik kontrol sistemleri? (bilgisayar kontrolu gibi)	1	2	3	4	5
b).Bölümünüz dışında sizinle ilişkide olan kişilerin değerlendirmesi?	1	2	3	4	5
c).Bölüm yöneticisi olarak sizin değerlendirmeniz ?	1	2	3	4	5
d).Bölüm elemanlarının kendi performanslarını değerlendirmesi?	1	2	3	4	5
e) Siz ve elemanlarınızın bir araya gelerek yaptığı değerlendirme ?	1	2	3	4	5

6. Bölümünüzü, işletmedeki diğer mukayese edilebilecek bölümlerle karşılaştırdığınızda, bu seneki performansı açısından aşağıdaki kriterlere göre hangi sıralamaya sokabilirsiniz?

	Ortalamanın çok altında	Ortalamanın biraz altında	Ortalama seviye-sinde	Ortalamanın biraz üstünde	Ortalamanın çok üstünde
a).Sene içinde üretilen toplam iş adet ve tutarına göre ?	1	2	3	4	5
b).Sene içinde üretilen işin kalitesine göre ?	1	2	3	4	5
c).Sene içinde ortaya koyduğu yenilik ve atılımlara göre ?	1	2	3	4	5
d).Ortaya koyduğu işin mükemmelliği açısından kazandığı nama göre?	1	2	3	4	5
e).Üretim ya da servis hedeflerine ulaşması açısından ?	1	2	3	4	5
f).Elemanlarınızın iş morali (işe devamlılık, bağlılık ve iş tatmini) açısından?	1	2	3	4	5

BÖLÜM - IV -

1. Bu işletmede ne kadar zamandır çalışıyorsunuz?

☐ 6 aydan az ☐ 6 ay-2 sene ☐ 3-5 sene ☐ 6-10 sene ☐ 10 seneden fazla

2. Siz dahil bölümünüzde çalışan toplam eleman sayısı:

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3. Cinsiyetiniz : Kadın ☐ Erkek ☐

4. Yaşınız :

APPENDIX 4: Work Unit Rating Form Distributed to External Raters

Aşağıdaki iş ünitelerini, son bir yıl içinde ortaya koydukları genel performans ve etkinliklerine göre hangi sıralamaya sokabilirsiniz?

İYİ	VASAT	VASATIN ALTI
(A)	(B)	(C)

İş Ünitesi

Derimod Kalite Kontrol ve Sevkiyat Bölümü
Derimod Atölyesi I
Derimod Atölyesi II
Derimod Atölyesi III
Ledershow Atölyesi I
Ledershow Atölyesi II
İhracat Atölyesi I
İhracat Atölyesi II
İhracat Atölyesi III
Derimod Kesim Bandı
İhracat Kesim Bandı I
İhracat Kesim Bandı II
Butik Modelleri Program Yürütme Bölümü
Kesimhane Program Uygulama ve Asorti Bölümü
Kesim Kontrol ve Dağıtım Bölümü
Ledershow Kesim ve Asorti Bölümü
Astar Kesim ve Dağıtım Bölümü
İhracat Kalite Kontrol ve Sevkiyat Bölümü
Ledershow Kalite Kontrol ve Sevkiyat Bölümü
Aksesuar ve Malzeme Deposu
Deri Satın Alma ve Depo
Model Geliştirme Bölümü
Muhasebe ve Personel Bölümü
İhracat, İthalat ve Finans Bölümü
Sahilyolu Mağaza
Kadıköy Mağaza
Osmanbey Mağaza