THE EFFECT OF PARTICIPATORY PROGRAMS SIMILAR TO TO QUALITY CONTROL CIRCLES ON ORGANIZATIONAL PRODUCTIVITY IN SELECTED MULTINATIONAL ORGANIZATIONS IN SAUDI ARABIA

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This study focuses attention on the multinational organization, an emerging phenomenon, in which people from different cultural backgrounds work together to produce a product or render a service. The purpose of this study is to enhance the available information about the potential for increasing productivity through the use of participatory programs, such as Quality Control Circles, in multinational organizations, especially those operating in Saudi Arabia.

The corporate population surveyed consists of ten organizations randomly selected out of the 100 Saudi Arabia based multinational organizations that are engaged in petrochemical operations. The total number of middle managers in the ten surveyed multinationals is 3,400; the sample population is 340 (10 per cent).

Two published, validated instruments on organizational characteristics were used. From a total response of 236, 184 usable questionnaires were obtained.

Hypotheses in this study are stated in a way that seeks to determine linear relationships. Therefore, the problem was identified as one of correlation-regression. The basic research posture is to show any relationships between the independent, dependent, and intervening variables of the research model.

The findings indicate that through the use of participatory decision-making programs similar to quality control circles, it is possible to increase both employee interest in productivity and commitment to work. The findings also indicate that an increase in the level of participatory activity was associated with an increase in productivity for the surveyed multinationals. True and lasting productivity gains, however, can be realized only through the effective utilization of people and the system within which they operate. Finally, the respondents expressed an overwhelming support for participative management systems rather than autocratic management systems.

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CHAPTER I

INTRODUCTION

One of the most significant changes affecting management during the last twenty years has been the emergence of multinational corporations. This development is the natural result of the evolution and growth of organizations taking advantage of international market opportunities and demands. Eiteman and Stonehill (6) remark that the importance of an international awareness is vividly illustrated by the fact that companies such as Gillette, Exxon, and Ford Motor derive a large percentage of their sales and profits from overseas operations. As more and more organizations engage in international trade in goods and services, the process of managing these activities in an inter-cultural environment will be of increasing importance. Eiteman and Stonehill contend that

> The increasing importance of international business activity is inescapable to the observer of contemporary economic events. The proportion of total North American business which is international is steadily rising. Focusing on the United States economy, from 1960 to 1976 total direct investment abroad increased almost twelvefold, from $11.8 billion to $137.2 billion (6, p. 14).

These cross-cultural activities not only are helping to reduce differences in technological and industrial processes but also are leading to adoption of new managerial concepts and techniques among many societies around the world. Furthermore, this process of cross-cultural exchange is causing many countries to compete for new ideas in management, and hence the flow of managerial concepts from one country to another is more likely today than ever before (7).

Negandhi and Prasad emphasize the necessity of understanding management in the international context. They state,

> The increasing interdependency of nations, the flow of capital, technology, and ideas from one country to the other, and a constant search for better methods in most productive endeavors add to the importance of a proper understanding of management in a world context (13, p. 6).

Dewar (5) points out that the capacity of the Japanese to borrow, adapt, and institutionalize some of the methods, techniques, and ideas of Western organizational technology and behavioral science is nowhere more clearly evidenced than in the introduction of Quality Control Circles (QCC). In less than ten years the term quality control circle has emerged from relative obscurity to appear with regularity in the media (8). Unlike job enrichment, theories X and Y, and other concepts that deal with comparatively specific actions and behaviors of individuals and organizations, QCC has

become a commonplace term which has an array of definitions, examples of what it is, examples what it is not, and lists of potential outcomes (5). The advantages of Japanese management style and technique are currently among the most popular items in business literature.

The phenomenal growth of interest in Japanese management philosophy, particularly participatory programs such as quality control circles, is evidenced by Business Week's special report, "The New Industrial Relations" (14), Fortune's continuing series, "Working Smarter" (18), and the evolution of quality control circles as a topic heading in International Management (3). What are the reasons for this level of interest? Cole (4, p. 22) suggests that the enormity of Japan's economic success as it became the second largest economy outside of the Communist block, its successful penetration of Western markets, and its high productivity are clearly among the major factors that account for this level of interest. As Cole states, "When you are getting hurt at the marketplace, you are inclined to sit up and listen" (4, p. 40)

Japanese firms are successful not only in selling goods to the Saudi market, but also, increasingly, in obtaining Saudi government contracts. As noted in a recent survey by the Saudi Arabia Ministry of Planning,

> At the same time as diversifying its development projects, the Saudi government is employing more Japanese and European contrators and suppliers. The Japanese in particular give systematic attention to the market and are highly successful in promoting their products in Saudi Arabia (16, p. 38).

There was a period of time during the 1970s when Dewar recalls that the question was "Can quality control circles or participative management systems succeed in the Western world?" (5, p. 1). This query is no longer an issue. Bocker (3) reports that QCC experts Ouchi, Pascale, and Wheelwright argue that several well-managed companies (such as General Electric, Hewlett-Packard, Delta Airlines, Westinghouse and others) have been using or are adapting something similar to the Japanese managerial practices of participative decision making, quality control circles, and other participative management techniques. The concept of QCC is a way of capturing the creative and innovative power that lies within the work-force. A more specific definition of QCC, simply stated by Dewar, is that it is "a group of workers from the same area who usually meet once a week to discuss their problems, investigate causes, recommend solutions, and take corrective actions when authority is in their purview" (5, p. 2). Yaeger (19) points out that hundreds of organizations in the U. S. have formed thousands of circles. Examples include Hughes aircraft, General Motors Corporation, Ford Motor Company, Bank of America, Memorex Corporation,and Foremost Foods.

The human growth and development theory (11, p. 46) in multinational settings is one promising social theory that can be utilized as the major conceptual framework in order to accomplish the purposes of this study. This theory does

not fundamentally question the basic political, social, or economic order in a society. Likert says, "The emphasis is primarily on how to arrange organizational settings in a given societal framework so as to facilitate the psychological development and growth of individuals and groups" (11, p. 46). The work of Likert and his associates at the University of Michigan is one of the few integration approaches to the study of organizational development.

Likert's (11, pp. 46-47) research findings show that group members adopt behavior similar to that practiced by their superiors. These findings support the thesis that management systems which are leaning toward System 4 are more productive, have lower costs, and yield more favorable attitudes. The worldwide trend is for more participative systems rather than autocratic management sytems.

The objective of this scientific inquiry is to contribute to the existing body of behavioral literature directed toward enhancing our understanding of working relationships within multinational organizations employing participative management practices. This dissertation serves to explore and expand the theoretical basis of why and where QCCs work and why and where QCCs might fail. When substantiated by research data, these findings can help to provide managers of both national and multinational organizations with the principles needed for analyzing and

selecting optimal functions of the QCC models and adapting these aspects to their respective organizational practices.

Statement of the Problem

The focus of this study is twofold. The first purpose is to investigate the effects and implications of quality control circles as participatory programs affecting organizational productivity in selected multinational organizations in Saudi Arabia. The second purpose is to discover whether or not a positive correlation exists between participatory programs similar to QCC and organizational productivity in the selected organizations.

Purposes of the Study

This work serves two purposes. The first is to identify the management systems of ten selected multinational organizations that are presently operating in Saudi Arabia. The second purpose is to investigate the effects and implications of Quality Control Circles as participatory programs affecting organizational productivity in ten selected multinational organizations in Saudi Arabia. [The emphasis of this study is not on Saudi Arabia; rather it is on the management practices in ten multinational firms that are presently operating in Saudi Arabia.]

The two instruments employed for this research are Likert's (11) "Profile of Organizational Characteristics" and Mott's (12) "Characteristics of Effective Organizations.

These instruments are used to classify the type of management system existing in each multinational organization presently operating in Saudi Arabia and to help examine the effect of each company's management system on its organizational productivity.

Significance of the Study

Few would dispute the statement that no country in the world has changed so drastically in so few years as Saudi Arabia. Within the span of one generation, this Middle Eastern kingdom has been transformed from an impoverished semi-nomadic society into a physically modern nation.

Saudi Arabia, the world's largest exporter of oil, is investing well over $130 billion into its two industrial complexes at Jubail and Yanbu (17, p. 22). Al-Bashir (1, p. 136) quotes Abdel-Aziz al-Jarbou, a managing director of Saudi Arabian Basic Industries Corporation (SABIC), as saying "We considered the best way of using our energy resources and available capital to be to set up petrochemical industries." SABIC is a government-sponsored company that acts as the Saudi investor and coordinator of most of the projects at Jubail and Yanbu.

According to Truell (17, p. 22), a host of multinational firms, mainly American and Japanese, are helping Saudi Arabia to develop these "new petrochemical" industries against which they will soon compete. These international firms are Exxon

Corporation, Mobil Oil Corporation, Shell Oil Company, three Japanese groups headed by Mitsubishi Corporation units, Celanese Corporation, and Texas Eastern Corporation. Equally significant to recent changes and development in Saudi Arabia are those that reflect stepped-up Japanese investment in Saudi Arabia and other Middle Eastern nations. This investment drive, like the similar thrust of U.S. multinationals in the 1950s and 1960s, will radically reshape the competitive atmosphere of world business in the 1980s. With the help of foreign corporations and a good deal of its own cash, Saudi Arabia will soon become one of the biggest exporters of petrochemicals, the materials used to make plastics, paints, artificial fibers, fertilizers, varnishes, and much more (10, 17).

According to the Saudi Arabia Ministry of Information (15), Jubail's six main petrochemical projects already are producing several million tons of methanol a year. The other Jubail plants will turn out up to 1.2 million tons a year of ethylene, 300,000 tons a year of methanol, 390,000 tons of low-density polyethylene, and many hundreds of thousands of tons a year of styrene, ethanol, methanol, and caustic soda. In addiition, a fertilizer factory and two iron and steel plants already are in production.

Al-Zamil, Minister of Industry, who is quoted by the Saudi Arabia Ministry of Information (15, p. 38), concedes that Saudi Arabia has a powerful advantage over other

countries in making petrochemicals due to its plentiful supply of cheap natural gas. This gas was previously flared off and wasted when oil was taken from the ground. Now, it is collected and sold to the petrochemical projects in Jubail for fifty cents per million British thermal units (BTUs), one-seventh the cost of naphtha, which is the raw material used by Japanese and European petrochemical makers.

Truell (17, p. 22), who writes for the Wall Street Journal, remarks that this global development, long dreaded by the world's major chemical makers, could spark trade disputes, might force some less-efficient and less-productive petrochemical producers to close their plants, and could upset the pricing of a number of petroleum byproducts. Even before large-scale production has begun, the prospect of Saudi competition is causing talk of prospective tariff barriers by the U.S. and Europe and has inspired fierce lobbying in Washington, Brussels and Tokyo by chemical-industry representatives (17, pp. 22-23).

The building of Jubail, Saudi Arabia's biggest industrial development, and Yanbou, its sister town on the Red Sea, represent one Arab strategy for using the billions of dollars generated by the oil price rises of the 1970s. Many Third World nations, particularly those with oil resources, have dreamed for years of building their own industries to transform raw materials into finished products instead of selling oil and buying back plastics, paints, and

other products made in the United States, Europe, or Japan. Using state-of-the-art Amreican technology, Japanese managerial techniques, and low Saudi energy costs, these new multinational organizations are projected by the Saudi Ministry of Planning (16) to control 15 to 20 per cent of the world market by the late 1980s.

As of today, Saudi Arabia remains America's biggest export market in the Middle East with an estimated $18 to $20 billion in U.S. goods entering the country (20 per cent of all Saudi imports in 1983). There are 500 American technical and managerial advisors who are working under the auspices of the U.S.-Saudi Joint Economic Commission in Riyadh to assist Saudi agencies in managing an assortment of industrial agricultural and infrastructural projects (16, p. 136).

As a result of these cross-cultural activities, a new form of organization is emerging as an evolution and growth of the increasing interdependence among the nations of the world. This is the multinational organization--one big conglomerate with people from different cultural backgrounds operating in different environments to achieve broadly based organizational goals. The inception of the multinational organizations (known as multinationals) is a significant development not only for those working and participating in the Middle East area but also for many researchers and scholars.

Since primary research is a major instrument in the advancement and progress of any organization, industry, or

region, the findings of this study should add to information presently existing about multinational organizations. To this researcher's knowledge, little if any research effort has been made to study relevant issues such as management systems in multinational organizations or the potential for transferring quality control circles to multinational organizations in the Middle East. Therefore, this effort holds the potential not only of stimulating more studies in the future but also of helping managers and other employees of multinationals to comprehend more fully the potential and the value to be gained by using participatory management techniques.

Research Methodology

This section briefly discusses the research methodology used in this study since details will be presented subsequently. Topics incude the procedures for sampling the population, data collection procedures, and a description of the research instruments used.

Sampling and Population

The corporate population surveyed in this study consists of ten multinational organizations that are presently based and engaged in petrochemical operations in Saudi Arabia. The respondents from these organizations are assumed to comprise a representative sample of the 100 multinational firms

operating in Saudi Arabia because they have been randomly selected and surveyed.

The researcher reviewed Angel's Directory of American Firms Operating in Foreign Countries (2) and a recent survey by Ministry of Planning in Saudi Arabia (16). The total number of middle managers in the ten selected multinational organizations is approximately 2,800-3,400. By surveying 10 per cent of the middle managers from ten randomly selected multinational firms, the sample population for this study is a total of 340 managers.

A sample of middle managers was selected as the population for this study because middle management plays an important role within any organization. It is from this group of people that the future executives are to be found, and in addition, middle managers have the responsibility to implement those actions projected by top management as well as to function as advisors of lower-level supervisors.

Data Collection

Primary data were obtained via a mailing of organizational questionnaires. To facilitate data collection, group sessions of one hour each were held with coordinators of the individual administrative units of the ten sample organizations. These coordinators were assigned by their respective top management hierarchies and were given an explanation of the rationale for and intended use of the study.

Research Instruments

The two instruments employed for this dissertation are Likert's (11) "Profile of Organizational Characteristics" and Mott's (12) "Characteristics of Effective Organization." These two questionnaires were used (a) to classify the type of management system existing in each multinational organization in Saudi Arabia, and (b) to examine the effect of each organization's management style on each organization's productivity.

Limitations of the Study

Kerlinger (9, p. 287) points out that limitations and trade-offs occur in the selection of one of several potential research designs. This study is no exception. Three specific limitations confront this research effort.

First, the corporate population surveyed in this study consists of only ten multinational organizations that are presently based and engaged in petrochemical operations in Saudi Arabia. The respondents from these organizations are assumed to be a representative sample of middle managers from the 100 multinational firms operating in Saudi Arabia because they have been randomly selected and surveyed. Second, due to financial and temporal restraints, this research is limited only to 10 per cent of middle managers who work for the ten firms and who were randomly selected to participate as respondents for this study.

Third, this study is subject to all limitations recognized in the collection of data by mailed questionnaires. These factors include the fourteen-page length of the questionnaire which may have affected the response rate of only 54 per cent. However, a final sample of 184 out of 340 middle managers was determined to be of sufficient size so as not to preclude meaningful analysis. Other drawbacks to the use of questionnaires are an inability to check the responses given for all items and an inability to assess the effect of nonresponse bias for missing data. All these factors limit the degree of generalizing the results beyond the sample and the existing conditions at the time of data collection.

Organization of the Study

This dissertation is organized into five chapters. Chapter I, Introduction, presents and outlines the structure of the study.

Chapter II, Review of Relevant Literature, provides a review of major research in the areas of comparative management, cross-cultural research, participative management, organizational effectivenesss, productivity, and quality control circles. In addition, the second chapter provides the theoretical foundation of the study in a manner that shows the relationship of the Likert model of Organizational theory and human organizational dimensions.

Chapter III, Research Methodology, presents the research model as a derivative of major studies and contributions in the field of participative management. This chapter also discusses study methodology, sampling, research instruments, hypotheses, definition of terms, and statistical procedures.

Chapter IV, Research Findings and Data Analysis, provides statistical tabulations and interpretations of the statistical tests, illustrations, and the results of tests of the stated hypotheses. Chapter VI, Conclusions, Implications and Recommendations for Future Study, presents a summary of the findings of the study, the implications of these findings, and recommendations for future research.

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CHAPTER II

REVIEW OF RELEVANT LITERATURE

The purpose of this chapter is to present the theoretical framework of this study in a manner that shows the relationship of the Likert (21, p. 45) model to organizational theory and human organizational dimensions (21, p. 45). This second chapter provides a review of major research in the areas of comparative management, cross-cultural studies, participative management, organizational effectiveness, productivity, and quality control circles.

Theoretical Framework

This dissertation employes Likert's (21, p. 8) "model of human organizational dimensions" as its major conceptual framework. Although Likert may not have been what some would call a prolific writer, he has been a creative catalyst who has inspired the writings and research of hundreds of other scholars. Likert's conceptualization of the management system and his advocacy of the participative management approach are based on his research efforts over many years at the University of Michigan (21).

Likert (22, p. 44) believed in the importance of the interaction-influence process and the team approach to management. He believed in the need for management to

develop its human resources in a systematic, long-term research-oriented manner instead of emphasizing the short term, bottom-line, profit center approach. Likert's thinking is easily recognized in most articles dealing with Japanese management such as Ouchi's theory Z, and quality control circles.

Likert's Model of Human Organizational Dimensions

Drawing on research findings from the Institute for Social Research at the University of Michigan, Likert (20) conceptualized four management systems along a continuum from system 1 through system 4. These areas on the continuum designated eight characteristics of the organizational climate--the degree of participation, the application of the principle of supportive relationships, group decision-making, group methods of supervision, high performance goals, team building, involvement of subordinates in setting goals, communication flow and sharing information.

The four generalized management systems proposed by Likert (2) range from a very autocratic to a very democratic management style. System 1, Exploitive Authoritative, is the most autocratic style; following are system 2, Benevolent Authoritative; System 3, Consultative; and System 4, the Participative Group, which is the most democratic on the continuum.

These four systems are described as follows.

System 1.--System 1 describes a management approach that is exploitive-authoritative. A company that would fit in this category has very little interaction between superiors and subordinates that is aimed at achieving organizational objectives. Communication is downward; the bulk of decisions are made at top levels. All members seem to be relatively dissatisfied within the organization. Only high levels of management feel a real responsibility for obtaining organizational goals (20).

In a system 1 approach, the lower levels of management feel less responsibility than upper levels; the rank-and-file workers not only feel little, if any, responsibility but also often welcome an opportunity to defeat an organization's goals. The lower levels have no ability to input into work-related decisions, which discourages teamwork. Corporations described in system 1 provide fairly good training resources and seek average goals (20).

System 2.--System 2 describes a benevolent-authoritative approach. This organizational system yields little interaction between superiors and subordinates. Information is usually communicated downward, and there is little room for initiative at the lower levels. Managerial personnel usually feel responsibility and strive to achieve the organization's goals. Decisions are made on a man-to-man basis almost entirely from upper levels, which discourages teamwork. A

benevolent-authoritative approach typically includes a desire by management to seek high performance goals and good management training (20).

System 3.--System 3 describes the consultative approach. It includes substantial trust in superior-subordinate relationships as well as much upward and downward communication. Responsibility for obtaining organizational goals is felt by a substantial proportion of all personnel, especially those at higher levels. Decisions for broad policies are made at the top levels in a consultative system, whereas more specific decisions are made at the lower levels where information is more accurate and available. Corporations using a consultative approach provide very good training resources and seek very high goals (20).

System 4.--System 4, the participative group approach, is the system that describes a management style where subordinates and superiors exhibit mutual confidence and trust in all matters. Communication is extensive and mobile, flowing upwards and downwards between both individuals and groups. Typically, personnel at all levels feel a real responsibility for achieving organizational goals and strive to obtain those goals. Teamwork is encouraged in this atmosphere and there is a high degree of worker satisfaction. Companies using a participative group approach provide excellent training resources and seek to achieve extremely

high goals. Results from research concerned primarily with business organizations have shown consistently that units of an organization which are more effective (measured by productivity, morale surveys, etc.) are more like the system 4 approach than are those units which are less productive (20).

Manipulating Determinants by Likert

Likert (21) contends that it is possible to measure the human organization or the management system of any enterprise by a relatively small number of key dimensions. These dimensions fall into three classes--causal, intervening, and end result variables. The causal variables are managerial leadership and organizational climate. As shown in Figure 1, management can alter these causal variables, which in turn produces changes in the intervening variables and henceforth in organizational performance.

The intervening variables are peer leadership, group process, and satisfaction. These variables reflect the internal state and health of the organization, such as the attitudes, loyalties, motivation, performance goals, and members' perceptions of their collective capacity for effective communication, interaction, and decision making (21).

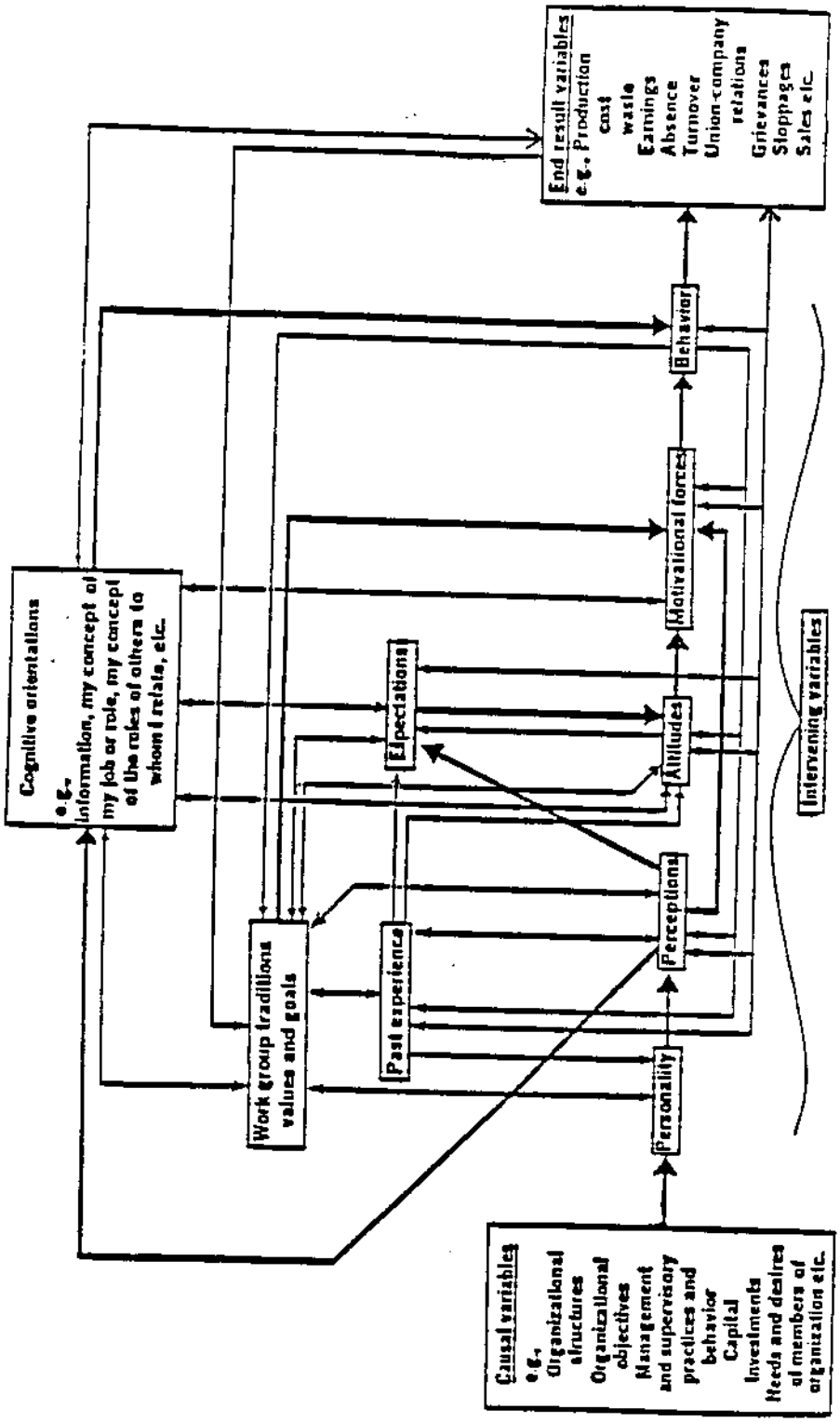


Fig. 1--Likert model of System 4. Schematic pattern of relationships between causal, intervening, and end-result variables, from Likert (20, p. 8).

The dependent variable (end-result variable) is the total productive efficiency of the organization. This variable reflects the achievement of the organization in regard to its costs, productivity, earnings, scrap loss, and market performance (21).

Likert and Likert's (23) conceptualization of the management system and their advocacy of system 4 management are based on research findings over many years that indicate some basic principles of the interaction-influence process and the team approach to management. Bowers (5) believes that these general principles operate in almost all instances and are transferable and universal.

> First, human nature, basically and in terms of inherited qualities, is the same the world over. Second, the scientific method is the same in all nations. Third, culture may influence the method of application of basic principles of management, but culture is not itself a basic principle of management. . . . With increasing industrialization cultural differences will very likely diminish; for one thing, industrialization creates large scale enterprises with large numbers of employees and with substantial interdependence (5, p. 108).

Although Likert and Likert (23, p. 56) advocate system 4 management as the most effective management system, they recognize the importance of the constant interaction between an organization and its external environment. This interaction is a two-way street, where the organization also has some influence on the external environment. Likert and Likert suggest that

> When an organization is using a different management from the external environment, problems are likly to be created. Thus system 4 organizations in an environment

> whose organizations and institutions are largely system 1 or 2 will experience a variety of pressure to move to a management system similar to the predominant characteristics of the external environment. The system 4 organization simultaneously will be creating forces in the external environment to move it toward system 4 (23, p. 56).

Major Research Contributions

Relevant literature in the areas of participative management, organizational effectiveness, productivity, and quality control circles is reviewed in this section. In addition, this section presents selected studies in organizational behavior literature which indicate that, in the long-run, the most effective management system is the participative approach. This system as advocated by Likert (20, pp. 46-47) seems to be the most promising approach in the quest for higher productivity and organizational effectiveness. According to Likert and Likert (23) management efforts must be directed as creating a work environment that fosters cooperation, mutual trust, and commitment, and is based upon a partnership of integrated interest. Basically, system 4 is a total planned human resource approach to managing an organization.

Appproaches that Guide Research in Comparative Management

Recognition of the importance of management as the most critical element in industrial growth and development has raised the question of the transferability of management concepts and of people, ideas, and techniques across national

boundaries. For the past two decades or so, social scientists have studied management and organizational behavior around the world. These studies involve comparative management, cross-cultural research, and international business.

Negandhi and Robey (27) identified three strategies that are guiding current research in comparative management. First, there is a concern for economic development; second, there is the macro-environmental approach; and third, there is the behavioral approach. According to Richmond and Copen (30), the economic development concern is based on the premise that managerial input is basic to the achievement of rapid industrial and economic progress in developing countries.

The behavioral approach attempts to explain behavioral differences in organizations as a function of cultural influences. The basic assumption is that attitudes, values, beliefs, and needs hierarchies are culturally determined. Negandhi and Robey contend that

> Research findings generally support the behavioral concern in comparative mangement. Attitudes, beliefs and values are different in different societies. However, the application of this knowledge to management of organizations is limited by a variety of conceptual and methodological problems (27, p. 17).

There are diverging views as to the transferability of management abilities and skills, or of management experiences, and one cannot get a definite view. Those who claim that management is culture-bound appear to contradict

themselves. For example, Gonzalez and McMillan (13), after conducting a study in Brazil in 1961, note that American management experiences abroad provide evidence that our uniquely American management philosophy is not universally applicable but rather is situational in nature. These authors also state,

> Transferred abroad, this know-how is first viewed with skepticism. Foreign national employees and partners are slow to respond and to understand the American scientific approach to management problems. However, once fully indoctrinated, they accept and support this way of doing things. The superiority of this more objective, systematic, orderly and controlled approach to problems is seen and appreciated (13, p. 41).

Haire, Ghiselli and Porter (14) conducted a comparative study in 1966 of managers' attitudes in various countries. The basic question for their research was, "When managers think about managing, are their ideas all pretty much the same or does managerial thinking differ from country to country?" Fourteen countries in North America, Europe, South America, and Asia were included in the survey. The results show a discrepancy between (a) managers' belief in an individual's capacity for leadership and (b) manager's initiative and attitudes about methods of leadership. These researchers found a high degree of similarity in managerial patterns and support for participative managerial practices. They also found that about 25 per cent of the variations were associated with national differences, which led them to conclude that there is an identifiable determinant of attitudes within each country.

When Richman and Copen (30) studied managerial practices in India, they sought to answer the question of transferability of managerial approaches from one country to another. Their study reveals that, basically, managerial practices and techniques--those developed in the United States and other industrialized countries--can be transferred and applied to developing nations (such as Saudi Arabia). Some of these practices can be transferred intact, others need modification, and some must be discarded and replaced by new approaches.

Haire, Ghiselli, and Porter (14, pp. 8-9) used a questionnaire developed by Haire and others to compare the responses of American and English managers. They found the attitudes of the two groups to be similar. The authors conclude that these similarities were noteworthy in view of the differences that exist in the two countries. The findings of Haire, Ghiselli, and Porter also can be taken to indicate a trend toward convergence in managerial thinking around the world.

Massie and Luytjes (25) reviewed articles written by management scholars in Western Europe, Eastern Europe, Asia, Africa and South America. They conclude that "There is considerable evidence . . . of a trend toward convergence of management processes and concepts despite the wide disparity in management practices, approaches, and emphasis (25, p. 364).

Furthermore, according to Massie and Luytjes (25, pp. 365-376), the elements of convergence in managerial attitudes and practices can be attributed to the following six developments. First, the spread of management education promises continued interchange among countries in the development of conceptual models for management. Second, the improved status of managers as a group in many countries has increased the chances that professionalization of management will continue, a pact which will attract more educated people into the profession. Third, although there are different definitions of the scope of management, the managerial functions such as planning, organizing, etc., are thought to be necessary to developing countries. Fourth, the spread of modern technology and techniques tends to result in transferability of the methods by which technology is managed. Fifth, all countries have focused attention on the role of management in economic development, particularly the role of management in meeting macro-economic objectives and in promoting overall social welfare. Sixth, regardless of political ideologies, the trend is mostly toward decentralization of authority and greater participation.

Participation and Organizational Effectiveness Research

Some writers (2, 3, 16, 31) propose that participatory management has positive values over and above its effects upon productivity, morale, and organizational effectiveness.

The concept of organizational effectiveness is encountered in many of the studies and research (23, 31, 32) in organizational theory. The theme that seems to run through most of the studies on organizational effectiveness reflects a common belief that the use of a more participative style of management generally improves organizational effectiveness. However, the literature reflects an inconsistency through a vague definition of the construct of what denotes a participative mangement style. As noted by Dachler and Wilpert,

> Participation literature includes a plethora of undefined terms and characteristically lacks explicitly stated theoretical frameworks. The pervasive value bases underlying topic labels like industrial democracy and power equalization are not usually made explicit and are therefore rarely systematically questioned. But different value systems imply different definitions of participation so that the term participation has a variety of meanings across investigators (9, p. 1).

Dachler and Wilpert (9, pp. 1-7) propose a four dimensional conceptual framework to distinguish between the variety of meanings of participation. First, they designate four social theories that underly participation, which include democratic theory, socialistic theory, human growth and development theory, and productivity and efficiency orientation. Second, Dachler and Wilpert (9, p. 6) describe the properties of participatory systems and discuss how the structures and processes of different participatory schemes may be utilized. Third, these authors define the conceptual boundaries within which participation occurs and which may

limit or enhance the possibility of participatory social systems. The fourth and final dimension discussed by Dachler and Wilpert is participation outcomes, or the end-result variables, which are basically a function of the other three dimensions.

There are five measures of effectiveness that are most frequently used, according to Steers (32, pp. 546-547). These measures are, first, performance, as measured directly in terms of production units and indirectly by employee and supervisory ratings; second, productivity, as measured by output-input data; third, employee satisfaction, as measured by self-report questionnaires; fourth, profit and rate of return, as based on accounting data; and fifth, withdrawal rate, as based on turnover and absenteeism data.

Gibson, Ivancevich, and Donnelly (12, p. 37), after reviewing models and studies of organizational effectiveness, propose a model in which the element of time was introduced. The underlying assumption for this model is that the test of organizational effectiveness is not only its ability to produce but also its ability to sustain itself in the environment. Therefore, survival is the ultimate measure of organizational effectiveness.

Argyris (1) argues that, in order to survive, an organization must adapt to the external environment, thereby maintaining its internal parts. This adaptation is done

either by changing its internal arrangement and objectives or by striving to change the environment.

Steers (32) reviewed seventeen models of effectiveness and found a lack of consensus among the models as to what constitutes a relevant and valid set of organizational effectiveness measures. Steers found that the measures which are most frequently used to assess organizational effectiveness are adaptability-flexibility, productivity, and satisfaction, in that order. Adaptability and flexibility were found in more than half of the models reviewed by Steers.

Organizational Productivity Research

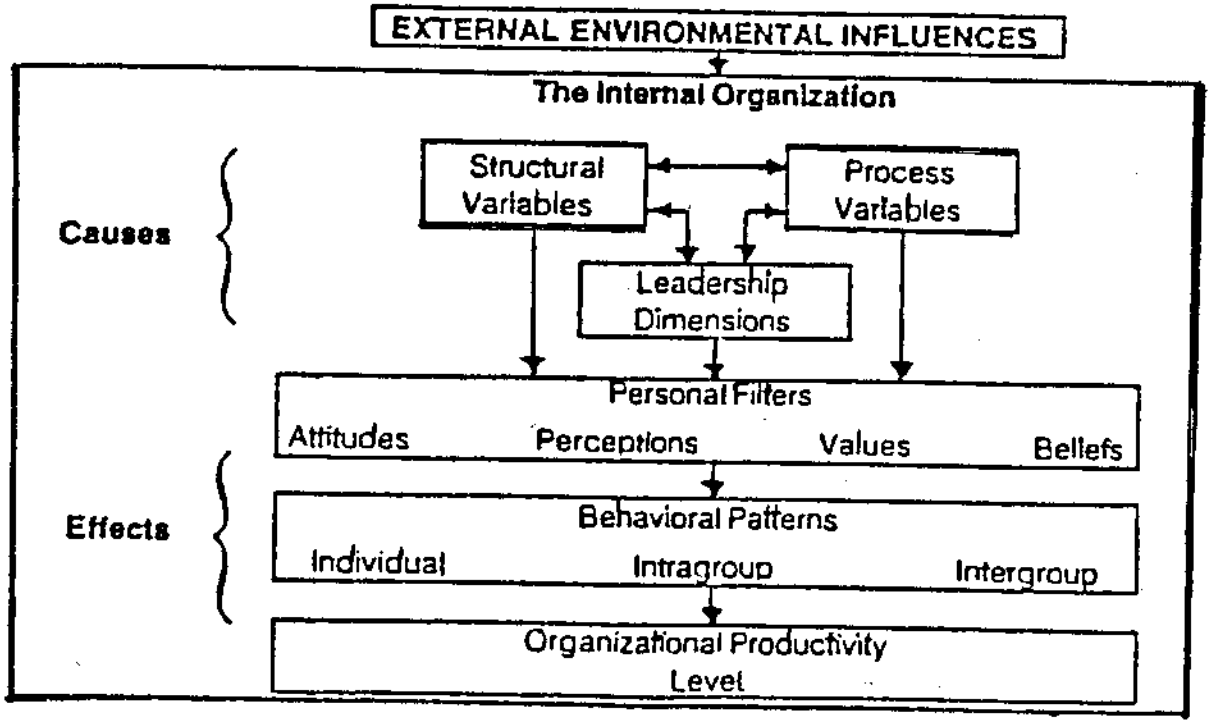
English and Marchione remark that

> The economists definition of productivity is the ratio of physical input to physical output. This definition, although technically correct, raises more questions than it answers. Output involves more than just quantity, it also involves quality. Yet the Bureau of Labor Statistics in calculating national statistics of productivity only utilizes the gross national product (GNP) divided by labor input to arrive at the national level of productivity, ignoring the all-important quality dimension. Should manufacturers of electronic calculators, television sets, or automobiles in calculating their level of productivity be content with just the numbers of units produced? Obviously not (1, p. 37).

Lloyd and Rue (24, p. 48) refer to productivity as units of output per worker-machine hour. Productivity is the result of three components: efficiency of technology, efficiency of human resources, and effectiveness of management. English and Marchione argue that

> Frequently, when discussing productivity, the concepts of effectiveness and efficiency are raised. These two performance measures generally work together but mean different things. Effectiveness measures whether or not goals such as profit and market share are met and has as its prime focus the determination of end results. Efficiency is the measure of productivity--it compares what is required to produce a given level of output and is concerned with the means to the end.
>
> As can be gleaned from the above discussion, productivity improvement is more than simply a matter of capital investment and labor. It involves a host of other factors, such as better work methods and measurement increased use of innovation and technology, quality control, motivation, and the utilization of proven management techniques. The point of this discussion is to put in perspective the critical dimensions that are involved in productivity improvement (11, p. 48).

The work of Rosenberg and Rosenstein (31) indicates, in addition, that an increase in the level of participatory activity through Quality Control Circles is associated with an increase in productivity and satisfaction. As Yager (35) notes, most of the Quality Control Circles programs are established to improve communication among people, to increase personal motivation, and to build morale. It is after these changes occur that improvement in productivity and product quality are generated. Figure 3 shows English and Marchione Productivity Determinant Model (11, p. 60), which is designed to focus management's attention on those significant areas where it can intervene effectively. The external environment, while important from a strategic viewpoint, is largely beyond the direct control of management and, therefore, is not crucial to this discussion.



Fig, 2--Productivity determinant model from English and Marchione(11, P.59).

The Quality Control Circle: Major Issues

According to Dewar (10, p. 1), a quality control circle is a small group of employees who meet regularly to identify, analyze, and solve a company's problems. Dewar further defines the quality control circle as

> . . . a way of capturing the creative and innovative power that lies within the workforce. It is a group of workers from the same area who usually meet for an hour each week to discuss their problems, investigate causes, recommend solutions, and take corrective action when authority is in their purview (10, p. 1).

History of the Quality Control Circle

Dewar (10, p. 4) states that prior to World War II, the world viewed Japanese products as low-priced and of poor quality. Essentially, they were viewed as producers of junk merchandise. Today, however, Japanese exports are sought after because of their reputation for high standards of design and quality.

In their effort to change this former situation and image, one of the early steps taken in Japan was a massive training program in quality for representatives from a wide variety of companies. According to Dewar, "Americans helped. Dr. Deming conducted courses in statistical methodology starting in 1950, and Dr. Juran provided training in the managerial aspects starting in 1954" (10, p. 5).

The growth of QCC in Japan can be attributed not only to training but also to the promotional activities of Japanese scientists and engineers (10, p. 190). Since 1962 the

activity has spread extensively until today it is estimated that more than 10 million Japanese are involved as members of QC circles (10, p. 190).

The concept of the quality control circle is not just another suggestion program in which employees come up with complaints or ideas for others to investigate or implement. Rather, Dewar (10, p. 292) says, it is a group process that has a range of potentially influencing decision-making capacity from identifying problems, finding causes, and proposing solutions to implementing those solutions where possible.

Yager (34) suggests that the key to successful participation programs such as QCC is the involvement of employees in every aspect. Over time, group activities may often shift from problem solving to problem prevention. The members learn about their jobs, their section, their plant; they experience personal growth and development; and they learn to communicate with each other, their supervisors, and their management. As Nelson states that

> This [use of QCC] is the first time management has come up with a program where we train the workers to speak managemenet language. Similarly, blue-collar workers are no longer just workers: they become the lowest level of management (28, p., 76).

Since Dewar (10) first introduced the U.S. quality control circle concept to Lockheed Missile and Space Company in 1973, the effort to mobilize the participation of workers in the everyday decision-making process has grown

tremendously. The typical circle member's attitude is reflected in this comment: "You begin to improvise and look for better and more varied uses of the tools" (16, p. 71).

According to Irwing (16) the quality control circles concept taps the energy and ingenuity of workers. Participant workers become involved physically, mentally and emotionally in all aspects of improving manufacturing operations.

Irving (16, p. 77) remarks that quality control circles provide a vehicle for unlocking the potential in workers' contributions to productivity and job satisfaction. Quality control circles also provide a vehicle for allowing workers a sense of dignity, a sense of fuller participation in the organization, and an opportunity to develop their skills. Concurrently, they contribute to the organizational goals of increased productivity, reduced cost, and improved quality.

Reasons Why Quality Control Circles Work

The introduction of QCCs into an organization involves a multifaceted change in the person-job relationships of the workers who become involved. As Wood and Hall (33, pp. 44-46) note, changes include training in a vareity of new skills, greater goal setting and feedback for specific tasks, and group approaches to problem solving. Many of the components of a QCC program are based on sound theoretical principles and research; others are based on common sense.

Job enrichment.--A theory frequently referred to in descriptions of QCCs is the job enrichment model. Many consultants and managers see QCCs as a means of providing workers with greater autonomy and the opportunity to work on more meaningful tasks. When the nature of the tasks performed by QCCs is viewed through the lens of a job enrichment model [such as the Odlham and Hackman model (29, p. 95)], there does appear to be some enriching of the jobs of participants.

Indicators of high skill variety, task identity, task significance, autonomy, and feedback are readily identifiable in descriptions of QCCs. Wood and Hall (33, p. 44) believe that the high levels of all these task attributes should lead to both higher quality and quantity of performance plus the higher satisfaction of group members.

Problem solving skills.--Some of the most pronounced cost-saving consequences of QCCs are probably due, say Wood and Hall (33, p. 44) to the development of problem-solving skills among individual members of the group. Training in problem-diagnosis techniques (such as cause-effect analysis, histograms, and Pareto analysis) increases the individual member's ability to identify and properly define work-related problems.

Furthermore, according to Wood and Hall (33, p. 45), attributional research shows that people are prone to a variety of errors in their attempts to diagnose performance

problems. These errors include inadequate use of historical data, lack of attention to situational factors, and an overweighting of personal factors in their identification of performance problems. No doubt the training in problem-solving methodologies which is part of QCC programs helps to minimize these errors and greatly increases the individual's feeling of confidence in his ability to solve problems. The focused nature of the problems on which the QCCs work--which is further reduced through the use of Pareto analysis--also enhances problem-solving effectiveness (33, p. 45).

Goal setting and feedback.--Latham and Shaw (19, p. 125) state that one of the most firmly established findings in the research on individual task performance is that goal setting and feedback lead to significant increases in performance because they inspire workers to exert greater effort on the task. In many of the QCC programs that have been observed, both goal setting and clear feedback on the status of a problem and on performance levels are integral parts of the group's activity. According to Latham and Shaw, "Pareto analysis is used to focus on the problem and then clear objectives and plans of action are established for the solution of the problem" (19, p. 125).

Participation and teamwork.--The work of Wood and Hall (33, p. 45) indicates, however, that the degree to which membership in a QCC is seen as satisfying the needs for self-

esteem, affiliation, and influence will determine members' commitment to the QCC program. When QCCs function according to the "ideal participative model" (as presented in most descriptions of QCC programs), member satisfaction increases with their supervisory activity and co-worker involvement. There are, however, some negative and destructive forms of group behavior (such as public criticism and exclusion of targeted individuals from group activities) that deviate from the model and can frustrate the needs and goals of group members.

Latham and Shaw (19, p. 125) remark that QCCs are designed to identify and solve what can be best described as "ill-structured problems" for which the solutions have usually been achieved by a combination of several different actions by individuals. Groups consistently outperform individuals on this type of problem and, therefore, QCCs would be expected to outperform the individual supervisors, managers, and staff members who have traditionally dealt with the problems.

Organizational communications.--Through the structured format of the group presentations to management, Wood and Hall state that "QCCs provide a mechanism for workers to communicate with managers about work related problems" (33, p. 476). The fact that presentations are organized in a problem-solution format--with accompanying cost-benefit

analyses where possible--makes the group proposals both more understandable and more acceptable to management. Also, if there is a commitment to the QCC program by upper management, then the resistance of the hierarchical chain of command to input from below is weakened. This improves the circulation of ideas and brings more knowledge to bear on solving problems (33, p. 46).

QCC works in Japan.--As Moran (26, pp. 14-22) remarks, the critical difference between the potential ease with which QCCs can work in Japan versus America has to do with the two nation's contrasting approaches to expertise. In Japan the company assumes responsibility for inculcating skills, while in America experts are usually hired from outside the company.

Koya and Hage (17, p. 18) suggest that the attitude which holds that employees have a limited and unchangeable set of skills results in a much lower utilization of their potential and, over time, in their becoming "deskilled." Surveys of employees in the United States indicate that more than a third of all workers feel that their skills are being under-utilized. The extent to which QCCs can improve productivity in American organizations will depend partly on the latent skills possessed by employees and how much opportunity QCCs provide for increasing the utilization of those skills. Even without improvements in productivity, increases in the workers' perceived level of skill

utilization could lead to increases in their job satisfaction and mental health (18).

Japanese managerial philosophies.--Chunge and Gray (7, pp. 43-44) state that there are three managerial philosophies that may have positively impacted the use of the humanistic approach to management. The first philosophy is the Japanese perception of the role of business enterprises in their society. The Japanese tend to view a business firm as a human community which serves the needs of its members including the employees, managers, and the general public. Profits are important to the Japanese managers, but the bottom-line performance becomes secondary to other functions such as meeting employees' needs and providing employment opportunities. This philosophy allows the Japanese managers to be sensitive to the needs of their employees and to develop a sense of common purpose among the members regardless of their ranks. In contrast, American managers tend to view their organizations as economic entities that serve the profit motives of their stockholders. In this view, meeting the needs of the employees and the public becomes secondary to the profit motive. The resulting difference is that American managers tend to be exploitative (7, p. 43).

The second managerial philosophy concerns the way Japanese view their employees. Chung and Gray (7, p. 82)

argue that Japanese managers see their employees as valuable resources who can make a major difference in organizational performance. Managers view employees to be as intelligent and responsible as they, themselves, are.

Finally, Chung and Gray (7, p. 44) point out that Japanese managers tend to view groups as superior to individuals in solving their operational problems. This group philosophy is that most tasks in contemporary organizations require cooperation of their members. Few decisions of any consequence arise from individual effort; most happen as a result of collective effort. It may take time to produce cooperative effort, but it pays off in prompt implementation. In contrast, American managers tend to have faith in individual effort, creativity, and initiative. Collectivism usually means to them a loss of individual freedom and motivation (7, p. 44).

As these advantages indicate, it is hard to tell which factors, if any, lead to the success of the QCC. Hall (15, p. 5) points out that other associated variables--such as better pay, a rise in unemployment, or a change in management--could also be the causes of increased productivity and improved organizational communications.

Conditions that Affect QCCs

In addition to asking why QCCs work, it is important from a practitioner's standpiont to ask where and when they work. Only by specifying and evaluating the effects of

various contingencies can the applied researcher provide the manager with any type of response to the question: "Will QCCs produce a change in my factory or organization?"

The work of Hall (15, p. 47) indicates that the nature of the task and the technology involved are conditions which affect the extent to which QCCs lead to improvements in quality or productivity. Many QCC successes are to be found in assembly industries where great mental attention is required of operators and assemblers. The extent to which employees are required to commit their skill in order to achieve high performance is a key facator.

The skills demanded can also include the concept of product quality or the exactitude of the technical specifications; e.g., a simple task that is performed with zero defects can be difficult. Therefore, the greater the skill demands placed on employees--by the nature of the task performed or the quality requirements for products--the more pronounced will be the effects of QCCs. In very low-skilled positions (e.g., manual labor), there will be fewer opportunities for changes in task methods, materials, equipment, or any other innovation that can have a significant effect on output (15, pp. 50-51).

Hall (15, p. 51) states that another factor which determines where and when QCCs work best is the degree to which the organization is operating near optimum. In a truly optimal system, all resource--including individual skills--

will already be effectively employed. As a work system approaches optimality, the potential contribution of a QCC toward productivity diminishes. Successful QCCs can run out of problems to handle, and at that point they should probably be discontinued unless they can make further significant contributions to worker morale.

Therefore, Wood and Hall (33, p. 53) remark, QCCs offer the greatest potential productivity contributions in situations characterized by under-utilization of resources and suboptimal performances. Similar logic can be applied to the analysis of likely changes in worker morale. When employees already have very high levels of satisfaction with co-workers, supervision, and the organization, the introduction of a QCC program may lead only to relatively small changes in these aspects.

The work of Koya and Hage (17, p. 80) indicates that in some industries or plants the level of automation can severely limit the extent to which QCCs can have a direct influence on the productivity of the work process. When tasks are performed by fully automated machinery, QCCs may be able to improve productivity or reduce costs through solutions to problems in areas such as scheduling, maintenance, raw materials, and scrap usage (17, p. 87). The potential for dramatic improvements in productivity in automated settings is lower than for those in which human factors have a more significant impact on performance. In

highly automated work settings, and in mass production industries where robots perform the dull, repetitive work, QCCs can serve to humanize the workplace and help upgrade the skills and morale of retained employees (17, p. 87).

Bocker's closed cycle of a QCC system is shown in Figure 3 (4, p. 14). It represents a model of the QCC process flow for one complete cycle. This model shows the various inter-dependencies of all groups involved (with the facilitator and steering committee in a central position) and how the QCC system actually works. Using this model, the effects that some changes will have on certain groups and the resulting interactions can be demonstrated or verified very easily (4, p. 22).

The circles in Bocker's (4, p. 24) Figure 3 indicate the various groups involved with some input, and the squares represent the activities or operations to be performed during the QCC process cycle. The solid or dotted arrows show the direction of the process flow and that of the advisory recommendational or cooperational inputs from the various groups of the QCCs.

Reasons Why Quality Control Circles Might Fail

Cole (6, p. 30) suggests that the major cause for the failure of QCC programs lies in the unrealistic expectations of managers who anticipate significant gains in a short term. These expectations are fed by the advocates of QCCs who

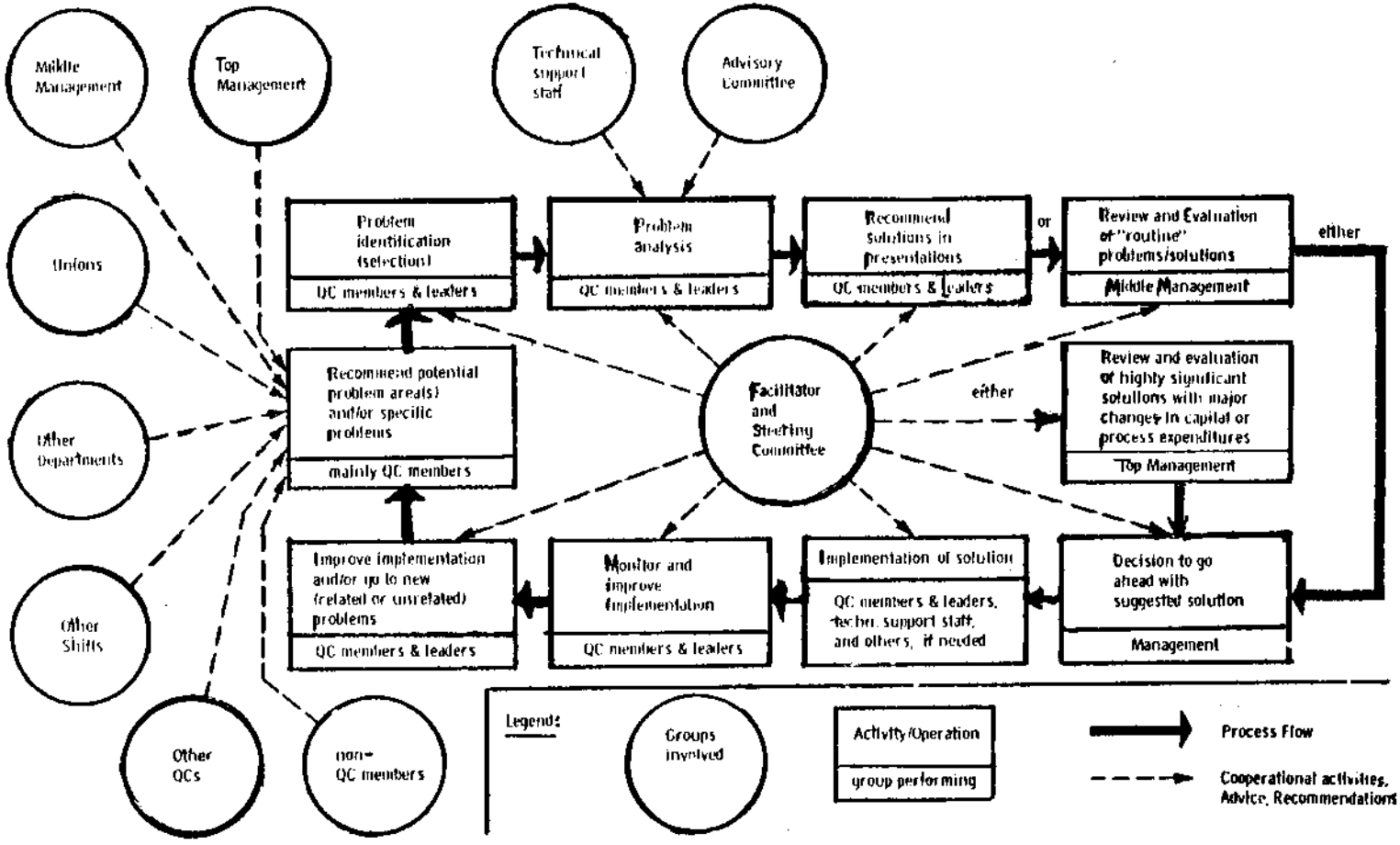


Fig. 3 --The closed cycle model of a QC process flow according to Bocker (4, p. 14).

constantly stress the productivity gains and cost savings of existing programs. Considerable publicity is given to QCC ideas that lead to large cost savings, sometimes in the range of hundreds of thousands of dollars; however, most QCCs work on problems whose solutions lead to much smaller and more incremental gains in productivity (6, p. 30).

Resistance to QCCs by union leadership can occur for two reasons, Cole (6, p. 32) says, one ideological and the other pragmatic. Ideologically, the union leadership may view QCCs as an attempt to exploit workers by making them solve management's problem without sharing in the rewards. At the pragmatic level, unions are sometimes threatened by the fact that an increasing level of cooperation between management and workers--which often occurs in worker participation programs--can undermine the perceived need for a strong union.

Middle management seems especially sensitive to problems (such as conflicts of interest with both upper- and lower-level management) in dealing with QCCs. As Cole states, "In many U.S. companies middle management has been bypassed by introducing the circles. As a result, these managers have come to see circles as a threat to their own positions (6, p. 32). This finding could be related to the high turnover in the ranks of technologically displaced middle managers.

There is a tendency for middle managers to be fearful that their superiors will interpret good suggestions by QCCs

to mean that such middle managers are not doing their jobs. These managerial personnel must realize, Cole (6, p. 33) says, that inviting consultation with or tapping the collective wisdom of their subordinates has generally been found to help managers to achieve their goals, not to hinder them in any way.

Cole (6, p. 33) suggests three strategies for improving middle management commitment to participatory programs through quality control circle techniques. Cole first suggests involving managers in the decision process to introduce circle activity. Second, Cole advises involving managers in a training "awareness program" so that even if they do not volunteer for the circle program, they will understand it. Third, Cole promotes showing middle managers that properly conducted circle activities will contribute to the managers' ability to meet and exceed normal operational goals, which ultimately will be reflected in their managerial opportunities for upward mobility and advancement.

Relevant Issues of Participative Management

Most of the research investigations into participative management focus upon those situations in which a leader (a) develops a collaborative relationship with his or her subordinates, (b) consults them from time to time on matters of concern to the work group, (c) allows them interest in the people and their suggestions, and (d) allows them discretion

in carrying out their duties (7, 9, 29). Most studies also deal with situations in which the group members participated in the decision-making process directly rather than through representatives (8, p. 5).

Cummings and Molloy (8, pp. 200-204) reviewed the findings of seven different rigorously designed experiments that are relevant to participative management. These studies involved a variety of work activities such as laundry, garment making, footwear assembly, clerical work, and maintenance. Generally in these experiments (but with some exceptions), both productivity and employee satisfaction increased under participatory leadership. The authors note that management's willingness to allow employees to participate in important work decisions let the employees know that they were considered competent and valued partners in the organization. This satisfied the workers' needs for recognition, independence, and appreciation by others. Cummings and Molloy (8, p. 204) found that when employees plan and put into effect their own decisions, satisfaction of the needs and values tied to those decisions is dependent upon effective execution of those decisions.

In reviewing six research experiments that examined the relationship between participation in decision making and member satisfaction, Yukl (36, p. 440) found that in all studies there was a positive correlation between participation and subordinate satisfaction. In examining

seventeen projects that investigated the relationship between participation and group productivity, Yukl (36, p. 442) found eleven projects that showed a positive correlation between participation and productivity, three with no correlation, two with a negative correlation, and one with mixed relationships for two groups.

Summary

The introduction of participatory programs into an organization involves a multifaceted change in the person-job relationships of the workers who become involved. These changes include training in a variety of new skills, greater goal setting and feedback for specific tasks, group approaches to problem-solving, and restructuring of communication flows between workers and management. Many of the components of participatory programs are based on sound theoretical principles and research; others are based on common sense. According to Yager, "The participative process is based on the fundamental principles established by Maslow, McGregor, Herzberg, McClelland and Likert. These motivation theorists believe that a worker must feel responsible for his/her own work" (34, p. 29).

Participative techniques work best where there is a firm commitment on the part of top management and where employees and supervisors have been taught how to participate. The point is that management cannot switch from an authoritarian to a participative pattern of leadership overnight and expect

employees to respond instantly to the new program. They must be taught just what is expected of them and how they are expected to perform.

The work of Rosenberg and Rosenstein (31) indicates, in addition, that an increase in the level of participatory activity through quality control circles is associated with an increase in productivity and satisfaction. As Yager (34) notes, most quality control circle programs are established to improve communication among people, to increase personal motivation, and to build morale. It is after these changes occur that improvement in productivity and product quality are generated.

Generally, the declining growth in American productivity has been blamed over the years on both the government and labor unions. Emerging evidence, though limited, suggests that the responsibility for U.S. declining productivity may also rest with management practices and behavior, such as the preoccupation with growth and diversification, short-term orientation of managers, and current practices of top management selection and motivation.

Chapter III presents the study design and methodology. Also presented is the research model which is derived from current studies in the field of participative management and quality control circles.

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CHAPTER III

RESEARCH METHODOLOGY

Study Design and Methodology

The four popular categories of social scientific research are laboratory experiments, field experiments, field studies, and survey research (6 , 1 5). This study utilizes a survey method. It is an exploratory field study also that tests several hypotheses. It is an exploratory study in the sense that it identifies the style of management system that is predominant for the sample respondents who are employed as middle managers in multinational organizations which presently operate in Saudi Arabia.

It should be emphasized that the focus of this dissertation is on the use of quality control circles by management. This is an hypothesis testing study in the sense that the researcher seeks to test for the existence of consistent relationships between participatory programs (similar to quality control circles) and increased organizational productivity. The sample surveyed utilizes ten selected multinational firms that are presently operating in Saudi Arabia.

Sampling and Population

The corporate population surveyed in this study consists of ten multinational organizations that are

presently based and engaged in petrochemical operations in Saudi Arabia. The respondents from these organizations are assumed to be a representative sample of the middle management employees of the 100 multinational firms presently operating in Saudi Arabia because they have been randomly selected and surveyed.

There are a number of methods used to determine how many employees should be included in a representative sample. Krejcie and Morgan (7, p. 607), Taylor and Bowers (17, p. 42), and Likert (9, p. 46) have devised tables to estimate the number of respondents needed to yield a representative sample. Using these three references, Angel's (1) Directory of American Firms Operating in Foreign Countries and a recent survey by the Ministry of Planning in Saudi Arabia (16) were consulted. The total number of middle managers in the ten selected multinational organizations is approximately 2,800 to 3,400. By surveying 10 per cent of the middle managers from ten randomly selected multinational firms, the sample population for this study is a total of 340 managers. A sample of middle managers was selected as the sample for this study because middle management plays an important role within any organization; it is from this group of people that the future executives are to be found. Middle managers have the responsibility to implement those actions projected by top management as well as to function as advisors of lower-level supervisors.

Data Collection

Primary data were obtained via a mailing of organizational questionnaires. To facilitate data collection, group sessions of one hour each were held with coordinators of the individual administrative units of the ten sample organizations. These coordinators, who were assigned by their respective top management hierarchies, and were given an explanation of the rationalale for and intended use of the study.

The designated coordinators were instructed to disseminate copies of the survey questionnaires in sealed envelopes to the middle managers named by their hierarchical authority. The completed questionnaires were then collected by the designated coordinators and delivered to the Marketing and Management (M&M) Corporation of Jeddah, Saudi Arabia, for mailing and distrivution. The M&M Corporation mailed all questionnaires directly to North Texas State University to guarantee anonymity and mail delivery and to reassure participants of the confidentiality of their responses. [M&M is a Jeddah-based Corporation; securing mail delivery is one of its main functions.]

As shown by data in Table I, the response rate resulting from the group sessions totaled 55 per cent of the ten participating organizations. Table I also shows each organization's alphabetic designation, code, nationality, type, number of questionnaires distributed, questionnaires

TABLE I

ORGANIZATION, TYPE, AND RESPONSE RATE OF DATA COLLECTED

Organization*				Sample = 341***	Questionnaires Collected			
Code No.	Reference	National Domination	Type**	Questionnaires Distributed****	Complete	Incomplete	Missing	% Usable Questionnaires
1	A	AM	p^r	34	19	5	10	56
2	B	AM	p^r	34	22	6	6	66
3	C	AM	d	38	19	5	14	50
4	G	GR	p^r	35	17	6	12	48
5	N	AM	p^+	30	18	4	8	61
6	M	JP	d	33	16	4	13	46
7	O	JP	p^+	32	15	4	13	46
8	X	JP	M	34	19	5	10	56
9	Y	GR	d	40	22	8	10	55
10	Z	JP	M	31	17	5	9	51
				341***	184	52	105	55

*AM = American; GR = German; JP = Japanese.

**Type: p^r = Production; p^+ = Petrochemical; M = Marketing, d = diversified.

***Sample size of more than 10% (341 of 3,000) is based on the table adapted from Krejcie and Morgan (7, p. 607).

****Questionnaires distributed only to the intended sample of the middle managers of the surveyed firms.

collected, and other relevant information. Additional details about the sample data are included in Appendix C.

Research Instruments

The two instruments employed for this dissertation are Likert's (9, pp. 46-47) "Profile of Organizational Characteristics" and Mott's (12, pp. 25-34) "Characteristics of Effective Organization." These two questionnaires were used (a) to classify the type of management system existing in each multinational organization in Saudi Arabia, and (b) to examine the effect of each organization's management style on each organization's productivity. (Copies of these questionnaires are included in Appendices A and B.) Likert's questionnaire is used because the emphasis is on the relationship betwen management systems and productivity. Mott's instrument deals only with productivity and is used as a reinforcement for the data gathered from Likert's instrument.

Likert's Survey Instrument

The first standardized instrument employed (with permission) for this survey study is Likert's "Profile of Organizational Characteristics" (9, pp. 46-48). The Likert instrument rates eight organizational variables that operate in any organization. These variables are operationally defined as leadership process, motivational forces, the communication process, goal setting or ordering, the control

process, and performance goals and training. The Likert questionnaire thus yields a profile of these eight variables using a "systems" continuum. These systems are shown along with their identifying range of scores for each (10, p. 78).

TABLE II

SYSTEM OF ORGANIZATION*

	System 1	System 2	System 3	System 4
Name of System	Exploitive-Authoritative	Benevolent-Authoritative	Consulta-tive	Participa-tive Group
Range of Scores	1.00-1.99	2.00-2.99	3.00-3.99	4.00-4.99

*After Likert (9).

Using Likert's instrument (9), the first variable is "leadership process," which is a construct defined as the extent to which superiors have confidence in subordinates and the mutual trust and confidence which subordinates have in their superiors. Leadership process also refers to the superior's supportive behavior toward others as well as the extent to which superiors relate to their subordinates in making them feel free to discuss important and related factors. A most important aspect of leadership process concerns the extent to which the superior tries to solicit the subordinates' ideas and opinions and the degree to which he makes constructive use of these opinions (9, p. 3).

The "character of motivational forces" is the second variable used on Likert's questionnaire. This construct

relates to the manner in which motives are measured and used as well as the satisfaction derived from these motives. Conflicting or reinforcing attitudes, and the way these attitudes are developed toward the organization and its goals, are also parts of the motivational forces variable. Other important aspects include the attitudes of members toward other members of the organization, and the amount of responsibility felt by each member for achieving organizational goals (9, p. 3).

The third variable is named the "communication process." This factor involves the amount of interaction and communication aimed at achieving organizational objectives, the direction and accuracy of the communication flow, and the psychological closeness of superiors and subordinates (9, p. 3).

The fourth variable, the "interaction influence process," concerns the amount, nature, and characater of interaction and cooperative teamwork present on the job. It also includes the amount of influential power that superiors (as well as subordinates) can exercise over goals, methods, and job activities. In short, the interaction-influence process involves the extent to which an effective structure enables one part of an organizational to exert influence upon other parts (9, p. 4).

The "decision-making process," variable number five, denotes the level of the organization at which formal

decisions are made. This construct concerns the accuracy and adequacy of the information available for decison making at the place where the decisions are made as well as the extent to which decision makers are aware of problems (particularly those in lower levels of the organization). The process of decision making depends on the proportion of technical and professional knowledge used in relation to the best level possible for making that decision. Also important is the extent to which subordinates are involved in work-related decisions (group pattern of organization) or whether the pattern is based on a person-to-person basis (9, p. 5).

The sixth organizational variable is "goal setting or ordering." This variable concerns the manner in which goals and orders are issued, the extent to which the different hierarchical levels strive for high performance goals, and the existence of forces accepting, resisting, or rejecting goals (9, p. 5).

The seventh variable, the "control process," is primarily concerned with the performance of the control function. This variable concerns the extent to which the review and control functions are concentrated in one person or area, the accuracy of measurements and information used to guide and perform the control function, and the extent to which there is an informal organization supporting or opposing formal organizational goals. According to Likert (9, p. 5), the control process also includes the extent to

which control data (e.g., accounting, productivity, costs) are used for self-guidance or group problem solving by managers and non-supervisory employees or used by superiors in a punitive-policy manner.

The last operating characteristic scaled by Likert is "performance goals and training." This variable deals with the level-of-performance goals that superiors seek to have the organization achieve. It includes the type of training received by the subordinate in relation to the desires of the superior. It also includes the adequacy of the provided training resources (9, p. 5).

These operating characteristics overlap somewhat in their respective areas (for example, the communication process and the interaction-influence process). However, an overall analysis of the questions in each of these eight areas reveals findings that are consistent with the research results obtained by Likert (9, p. 6) This conclusion states that those units of an organization which are more effective (measured by productivity, morale surveys, etc.) are more like system 4 than are those units which are less productive. As Likert says,

> A high-producing office has a management system more to the right in the table, while a low-producing office is characterized by having a management system more to the left. In fact, it has been found that no matter where the high-rated office falls in the table, the lower office will fall to the left (9, p. 3).

Rationale for Use of Likert's Instrument

Likert's (9) "Profile of Organizational Characateristics" was considered be the most appropriate instrument for this study because, first, the management system concept and the major portion of the research model employed herein is the product of Likert and his associate researchers at the University of Michigan Institute for Social Research. Most importantly, Likert's "Profile of Organizational Characteristics" has served as a catalyst for the few published primary data studies that utilize multivariate statistics.

The second reason this questionnaire was chosen over alternatives is that it taps critical dimensions such as organizational climate, peer leadership, the group process, and productivity. These dimensions are the focus of this study.

Third, the Likert instrument has been used successfully in one form or another in countries such as Brazil, Yugoslavia, Sweden, and Japan (9). Butterfield and Farris used Likert's instrument with Brazilian bank organizations and conclude that "the results of the present study suggest that the Likert's 'Profile of Organizational Characteristic' may be a useful instrument . . . even if system 4 theory is only partially supported in Brazil" (2, p. 15).

Rationale for Use of Mott's Instrument

The "Characteristics of Effective Organizations" instrument was developed by Mott (12) and used with his permission. The instrument measures organizational effectiveness in terms of productivity. Mott's (12) instrument has been used in at least ten studies that include a Pennsylvania state mental health hospital, a part of the administrative office of the U.S. State Department, the financial-accounting management offices of Delta Airlines, a part of the World Bank study on Egypt and Sudan, and it was administered in group sessions to a few organizations in Yugoslavia and other foreign locations.

Mott's (12, pp. 28-30) perceptual instrument has several advantages for this research. First, it is a beneficial instrument to use in cases where the measurement of objective data (such as hidden costs and output) is not possible. Second, it is convenient to use and administer. Third, it provides results that are comparable across varying types of measures. Fourth, the Mott instrument is based on a scale of 1 to 5 (a Likert-type rating scale), with 5 as the most effective or productive level and 1 as the least or nonproductive level. It thus provides comparable data for analyses with the findings from Likert's (9) "Profile of Organizational Characteristics."

Reliability Issues

The reliability of a measurement instrument as defined by Kerlinger (6) concerns the consistency of results reproduced from repeated measurement of the same objects or the consistency between different objects over time. That is, a questionnaire will be considered reliable if the same scores are obtained from repeated measures of the same or comparable phenomenon (6, p. 292).

For this study consistency of measurement results were tested statistically via the split-half, test-retest, and Cronbach's Alpha (3, pp.297-320) reliability correlation coefficients. The data in Table III show inter-item consistency results and the reliability estimates for indices used in the research model. The consistency of subjects' responses was tested through test-retest correlations where a separate and slightly different worded question or a statement was included in the questionnaire for the same item.

The data in Table IV show the results of the Students' t test to compare mean scores for subjects' responses. The t values indicate that no significant differences were found at $p = .05$ for any indices in the research model. The data in Table V present the test-retest results to confirm earlier research findings.

Although Likert's (9, pp. 46-47) indices of managerial leadership, organizational climate, peer leadership, and

TABLE III

RELIABILITY ESTIMATES FOR INDICES IN THE STUDY* (RELIABILITY COEFFICIENT ALPHAS AND MEGA INDICES)**

Multitrait-Multimethod Matrix Traits	Managerial Leadership					Mega Index	Organizational Climate					Mega Index	Peer Leadership				Mega Index	Process		Productivity	
	A1	B1	C1	D1	E1		A2	B2	C2	D2	E2		A3	B2	C3	D3		A4	Mega Index	A5	Mega Index
Management System (Independent Variable) Dimensions/Indices																					
Managerial Leadership																					
A1 Goal Emphasis	(.86)																				
B1 Team Building	.72	(.82)																			
C1 Support	.76	.71	(.80)																		
D1 Involvement	.68	.62	.76	(.76)																	
E1 Help with work	.75	.71	.72	.48	(.80)																
Mega Index	.83	.92	.70	.89	.82	((.86))															
Organizational Climate																					
A2 Motivation	.40	.47	.38	.56	.69	.66	(.58)														
B2 Concern for People	.49	.35	.44	.52	.75	.68	.66	(.68)													
C2 Communication Flow	.51	.43	.52	.56	.55	.43	.52	.59	(.72)												
D2 Decision Making Practices	.31	.41	.45	.40	.39	.49	.51	.49	.61	(.86)											
E2 Influence on Others	.32	.49	.44	.50	.43	.44	.56	.47	.51	.42	(.53)										
Mega Index	.47	.62	.78	.55	.66	.77	.79	.88	.85	.93	.77	((.78))									
Internal State Intervening Variable) Dimensions/Indices																					
Peer Leadership																					
A3 Goal Emphasis	.57	.72	.78	.65	.76	.66	.79	.88	.80	.90	.78	.74	(.72)								
B3 Team Building	.67	.82	.88	.75	.86	.81	.89	.61	.81	.87	.80	.68	.80	(.84)							
C3 Support	.77	.72	.78	.65	.76	.72	.79	.51	.91	.97	.70	.78	.88	.84	(.78)						
D3 Help with Work	.76	.82	.88	.75	.86	.78	.89	.61	.89	.93	.80	.81	.80	.81	.82	(.82)					
Mega Index	.66	.77	.76	.62	.78	.81	.86	.85	.91	.90	.78	.80	.88	.61	.81	.78	((.80))				
A4 Group Process	.37	.61	.68	.45	.56	.46	.86	.78	.86	.73	.68	.86	.77	.71	.78	.82	.83	(.86)			
Mega Index	.37	.61	.68	.45	.56	.48	.86	.78	.86	.73	.68	.88	.72	.71	.78	.82	.83	.86	((.86))		
Productivity (Dependent Variable)																					
A5 Productivity	.47	.71	.78	.55	.66	.62	.88	.88	.80	.83	.78	.86	.87	.81	.88	.87	.73	.80	.82	(.88)	
Mega Index	.47	.71	.78	.55	.66	.68	.88	.78	.80	.83	.78	.82	.87	.81	.88	.87	.73	.80	.82	.78	((.88))

*Reliability estimates are based on Cronbach's method of internal consistency (3).
**Reliability coefficient alphas are in parentheses. Mega index values are in two parentheses.

TABLE IV

GRAND MEAN SCORES FOR VARIABLES IN THE STUDY BY FIRMS
TEST-RETEST USING DIFFERENT METHODS AT DIFFERENT TIMES

Management System	B(2)	B(1)	Comments	M(1)	M(2)	Comments About the Two Samples
Managerial Leadership						
Goal Empnasis	3.40	3.58	Difference is not significant	3.90	3.30	Differance between samples is not significant*
Team Building	3.25	3.55	" " " "	4.00	4.20	" " " "
Support	3.60	3.85	" " " "	3.86	3.90	" " " "
Involvement	3.30	3.32	" " " "	3.98	4.10	" " " "
Help with work	3.50	3.75	" " " "	3.62	3.90	" " " "
Mean Average (GM)	3.41	3.61	" " " "	3.99	3.96	" " " "
Organizational Climate						
Motivation	3.45	3.65	" " " "	4.41	4.75	" " " "
Concern for People	3.30	3.60	" " " "	4.25	4.30	" " " "
Communication Flow	3.25	3.25	" " " "	4.70	4.25	" " " "
Decision Making Practices	3.10	3.60	" " " "	4.90	4.25	" " " "
Influence on Others	3.00	2.55	" " " "	4.80	4.40	" " " "
Mean Average (GM)	3.22	3.33	" " " "	4.61	4.39	" " " "
Independent Variable Grand Mean	3.31	3.47	" " " "	4.30	4.17	" " " "
Likert's anagement system[1] classification	3	3	The same classification	4	4	The same classification
Grand Mean for Intervening and Dependent Variables						
Internal State (Intervening Variables Variables)	3.20	3.49	Is not significan	4.08	4.20	Is not very significance
Productivity (Dependent Variable)	3.75	3.66	" " "	4.16	4.20	" " " "

*Likert classified management system on the following bases: System 1 = 1-1.99; System 2 = 2-2.99; System 3 = 3-3.99; System 4 = 4-4.99.

**Using Student's t test to check for significance between sample's results with p = .05.

TABLE V

COMPARISON BETWEEN THE RESULTS OF THE STUDY AND THE RESULTS OF SAMPLES SELECTED LATER ON

Summary of the Study -- Ten Firms (old)				Summary of the Samples -- Two Firms (new)			
1. Method of collecting data was questionnaires completed by middle managers of the ten selected firms in the study.				1. Method of collecting data was the use of a separate and slightly different worded question that was included in the questionnaires for the same items. To be completed by middle managers in only two out of ten firms.			
Variables	Multiple Regression	Regression Square	F-ratio	Variables	Multiple Regression	Regression Square	F-ratio
2. Productivity (Dep. Variable) on Management System	0.80	0.65	14.65	2. Productivity (Dep. variable)	0.78	0.58	8.87
3. Internal State of the selected firms on management system.	0.77 0.82	0.56 0.62	7.41 8.55	3. Internal state on Management System	0.64 0.78	0.52 0.68	5.41 6.24
4. Productivity on Internal State of the Firms	0.64	0.52	8.25	4. Productivity on Internal State of the Firms	0.54	0.45	4.75
5. The correlation coefficients were found to be positive for all variables in the study.				5. The correlation coefficients were found to be positive for all variables in the sample.			
6. Linearity of the relationship is apparent with most of the groups in the study.				6. Linearity of the association is apparent with most of the groups in the sample.			
7. Grand mean scores for variables in the study by firms are located between systems 3 or 4.				7. Grand mean scores for variables in the sample by firms are located between systems 3 or 4.			
8. Students' t test was utilized to test organizational mean scores.				8. Students' t test was utilized to compare and test differences (no significant differences between the second sample and the results of the study were found.			

*The purpose of this comparison is to enhance reliability and validity.

**Test-retest using two different methods of testing at different times, confirms earlier testing and research findings, all at p = .05.

group process have been tested for validity and reliability by Taylor and Bowers (17), and although Mott's (12) indices of productivity and adaptability also have been tested, a reliability test of these indices was conducted for this study to enhance their credibility. Kuder-Richardon's (8, p. 163) Alpha was calculted for each index because it measures the coefficient of equivalence, showing how nearly two measures of the same trait agree; the Mega test (8, 10, 15) shows how much each index score depends upon general and group factors rather than the item-specific factor. The data in Table VI show the means and standard deviations for the indices involved in this study. The data in Table VI also show the Mega indices and the internal consistency reliability Alphas for the multi-item indices (15).

Most researchers (9, 12, 15, 17) consider Alpha at .70 to be an acceptable criterion for adequate scale reliability. Using the .70 criterion, the data in Table VI indicate that all but 3 of the 16 indices (motivation, concern for people, and influences on others) meet the standard for adequate scale reliability. The Mega indices of all 5 factors (indices) meet this criterion.

Further refinement of the research instruments [Likerts (9) "Profile of Organizational Characteristics" and Mott's (12) "Characteristics of Effective Organizations"] will THIS indicate a direction for future corporate development in international setting. This should also help managers and

TABLE VI

SUMMARY OF RELIABILITY TESTS: MEANS, STANDARD DEVIATIONS AND THE INTERNAL CONSISTENCY RELIABILITY ALPHAS FOR THE MULTI-ITEM INDICES INVOLVED IN THE RESEARCH MODEL

Variables in this Study	Grand Mean	Standard Deviation	Reliability Alpha	Statistically Reliable at .70
Managerial Leadership				
Goal Emphasis or setting	3.98	0.78	0.86**	Yes
Team Building or teamwork	3.93	0.73	0.82**	Yes
Support through leadership	4.10	0.59	0.80**	Yes
Interaction	4.12	0.71	0.76**	Yes
Help with work	3.81	0.75	0.80**	Yes
Mega Index	3.98	0.69	0.86**	Yes
Organizational Climate				
Motivational leadership	4.01	0.39	0.58	No
Concern for People	3.82	0.51	0.68	No
Communication Process	3.82	0.53	0.72**	Yes
Decision Making Process	4.00	0.53	0.86**	Yes
Influences Process	3.57	0.40	0.53	No
Mega Index	3.93	0.47	0.78**	Yes
Peer Leadership				
Goal Emphasis or setting	3.80	0.51	0.72**	Yes
Team Building or teamwork	3.93	0.58	0.84**	Yes
Support through leadership	4.10	0.43	0.78**	Yes
Help with Work-interaction	4.10	0.60	0.82**	Yes
Mega Index	3.80	0.57	0.80**	Yes
Group Process	3.80	0.44	0.86**	Yes
Organizational Productivity				
Productivity	3.88	0.40	0.88**	Yes
Mega Index	3.88	0.49	0.88**	Yes

*Based on Cronbach coefficient Method (3).
**Reliable and significant at .70 criterion.

other employees of multinationals to reach a better comprehension of the potential and value to be gained by using participatory techniques.

Development of Hypotheses

An hypothesis is a tentative prediction or explanation about the relationship between two or more variables. According to Kerlinger (6), the criteria used to assess the quality of hypotheses are that they should be as simple as possible, they should be stated in general terms (so the explanations can be generalized across a variety of situations without qualification), they should not only explain presently known facts but also predict future facts, and they must always be stated in advance of data collection. In line with these criteria, the following hypotheses are used for testing the data from this study.

Hypothesis One

Hypothesis one is stated as follows. "The most predominant management system in multinational organizations presently operating in Saudi Arabia will be classified (using Likert's 'Profile of Organizational Characteristics') as falling within Likert's system 1 (exploitive-authoritative) or system 2 (benevolent-authoritative) management system category."

Explanatory comment about hypothesis one.--According to Likert's (9, pp. 197-211) "Profile of Organizational

Characteristics," management systems can be described in terms of a continuum with the most autocratic at one end and the most democratic or "participative group system" at the other end. Likert describes four generally distinct areas of the continuum: exploitive-authoritative, benevolent-authoritative, consultative, and participative. In his text, The Human Organization, Likert (9, pp. 13-47) calls these areas systems 1, 2, 3, and 4, and system 1 is the most autocratic or "classical" organizational design, and system 4 is the most democratic organizational design.

Statistical procedures for hypothesis one.--Hypothesis one predicts that the management system most predominant in the surveyed multinational organizations operating in Saudi Arabia will be system 1 or system 2. Organizational mean scores are used for this hypothesis to classify management systems as 1, 2, 3, or 4, according to the Likert's profile of organizational characteristics. An analysis of variance of organizational mean scores for dimensions of management systems is used to test the significance of the difference between means (at a .05 significance level) for the surveyed organizations.

Hypothesis Two

Hypothesis two is stated as follows. "There will be a positive significant relationship between the existence of participatory programs, which are similar to Quality Control

Circles, and organizational productivity in the ten selected multinational firms in this study."

Explanatory comment about hypothesis two.--Participatory programs refer to certain types of practices, behaviors, and beliefs, as perceived by the surveyed respondents, that are expressed in terms of several items such as participative behaviors, beliefs, and practices and which include information sharing, sensitivity, support, help with work, team work, and concern for people, as measured in this study by utilizing Likert's "Profile of Organizational Characteristics." Productivity is operationally defined as the employees' perceptions of the quantity and quality of work done in their divisions or departments as well as the efficiency with which the work is done.

Statistical procedures for hypothesis two.--Hypothesis two tests whether or not a positive correlation exists between participatory programs, which are similar to Quality Control Circles, and organizational productivity in the ten selected multinational organizations in Saudi Arabia. According to Mott (12, p. 30), productivity is measured by employees' perceptions of the quantity and quality of work done in their divisions and departments as well as the efficiency with which the work is done. The correlation coefficient procedure, according to Hays (5), is used to

measure the direction of relationship between the variables (productivity and participatory programs similar to QCCs) stated in this hypothesis.

Multiple regression analysis is applied to substantiate explicitly the strength of the relationship between participatory programs similar to QCCs and organizational productivity in the surveyed multinational organizations and to delineate the differing sources of explained and unexplained variations. All tests concerning this hypothesis are conducted at a .05 significance level.

Hypothesis Three

Hypothesis three is stated as follows. "There will be a positive correlation between participatory programs which are similar to Quality Control Circles, and the internal state of the surveyed firms in this research."

Explanatory comment about hypothesis three.--The internal state of the surveyed firms in this study is operationally defined by indices of peer leadership and group process. Likert and Likert (11, p. 101) contend that peer leadership contributes to the strength and effectiveness of participatory programs. Research findings by Likert and Likert (11, p. 102) show that group members adapt their behavior to match that which is practiced by their superiors. The factor of group process---which includes planning and coordinating, decision-making and problem

solving, sharing information, meeting objectives, confidence and trust--is formed from the influence of both managerial leadership and peer leadership.

Statistical procedures for hypothesis three.-- Hypothesis three tests whether or not a positive correlation exists between participatory programs, which are similar to QCCs, and the internal state (as measured by the factors of peer leadership and group process) of the surveyed firms. For testing this hypothesis, the correlation coefficient is calculated to measure the strength and direction of relationships between variables stated in this hypothesis (participatory programs and the internal state of the surveyed firms in Saudi Arabia).

Multiple regression analysis (5) is performed on the data to evaluate the dependence of measures of the internal state of the surveyed organizations on participatory program dimensions, i.e., managerial leadership and organizational climate. All tests concerning hypothesis three are conducted at a .05 significance level.

Hypothesis Four

Hypothesis four is stated as follows. "There will be a positive significant correlation between the internal state of the surveyed multinational firms and the organizational productivity of these organizations."

Explanatory comment about hypothesis four.--Hypothesis four tests whether or not a positive correlation exists between indices that measure organizational productivity and indices that measure the internal state of the surveyed firms in this study.

Statistical procedures for hypothesis four.--The same procedure that is used for hypotheses two and three is followed for the analysis of hypothesis four. The correlation coefficient is calculated for the internal state of the surveyed firms in this study--operationally defined by the indices of peer leadership and group process--and productivity indices, to determine the strength and direction of the relationship.

Multiple regression analysis (6) is applied to determine the proportion of variance in organizational productivity measures explained by scores on the internal state of the surveyed organizations' dimensions (peer leadership and group process). All tests concerning this hypothesis are conducted at a .05 significance level; at least one test is conducted at a .01 significance level.

Statistical Procedures and Data Analysis

A researcher may select a parametric or nonparametric statistical procedure depending on the assumptions made about the population from which the sample is drawn. Some researchers view parametric procedures as the standard tool

of psychological statistics (5, pp. 490-495); meanwhile, others prefer to use nonparametric tests which have less stringent assumptions than parametric tests. Assumptions of normality and homogeneity of variance are two assumptions that have major importance in parametric statistics (8). Kerlinger considers these differences in parametric and nonparametric testing to be overstated. He suggests that

> unless there is good evidence to believe that populations are rather seriously non-normal and that variances are heterogeneous, it is usually unwise to use a non-parametric statistical test in place of a parametric one. The reason for this is that parametric statistical tests are almost always more powerful than non-parametric tests (6, p. 284).

There is no reason to believe either that the population surveyed in this study is non-normal or that the variance of these data is heterogeneous (6). Parametric statistics, therefore, are used to analyze and test these data. Hypotheses two, three, and four are stated in a way that seeks to determine relationships, specifically linear-relationships. Therefore, the problem was identified as a correlation-regression problem (8, pp. 265-287). The basic research posture is to show whether or not there are relationships between the independent, dependent, and intervening variables stated in this study. All statistical procedures utilized in this study, including the Statistical Package for the Social Sciences (SPSS) (13) were done at the North Texas State Univeristy Computing Center.

Research Variable Selection and Model Development

Having reviewed the relevant literature and having held discussions with several practitioners in the field of organizational productivity and participative management techniques, the following variables were identified as potentially significant for the purpose of this research and are presented under each of the general categories outlined in the proposed research model. First, there are the elements used to measure the independent variable--management system--which include managerial leadership and organizational climate; second, there are the elements used to measure the intervening variables, which include peer leadership and group process; third, there is the end-result--dependent variable--which includes organizational productivity.

The research model of this study is based on Likert's (9, p. 8) human organizational dimensions model with modifications that (a) incorporate Likert's earlier designation of management system and (b) introduce organizational productivity into the model. As previously stated, in order to study the human organization of any enterprise, Likert (9, pp. 46-48) identifies a number of key dimensions that fall into the three classes of causal, intervening, and dependent variables. Management can alter the causal variables, which will produce changes in the intervening variables, and will in turn affect the end result

productivity or performance data. The work of Likert and his associates at the University of Michigan is one of those few integration approaches that is used to study organizations which is based on the human growth and development theory. The human growth and development theory (9) is a promising social theory to use in a multinatinal organization setting because it neither fundamentally questions nor concerns itself with the basic political, social, or economic order of a society. An explicit representation of an independent, intervening, and dependent variable is provided in the research model, Figure 4. Table VII presents operational definitions of the specific variables in the research model that are the focus of this study.

Manipulating the Variables in this Study

The research model is designed to focus management's attention on those significant areas where it can intervene effectively. The external environment, while important from a strategic viewpoint, is largely beyond the direct control of management in Saudi Arabia and, therefore, is not crucial to this discussion. The organizational climate, managerial leadership, group process, and peer leadership variables (referred to as independent and intervening variables), which are clearly within the control of management's efforts, must be directed at creating a work environment

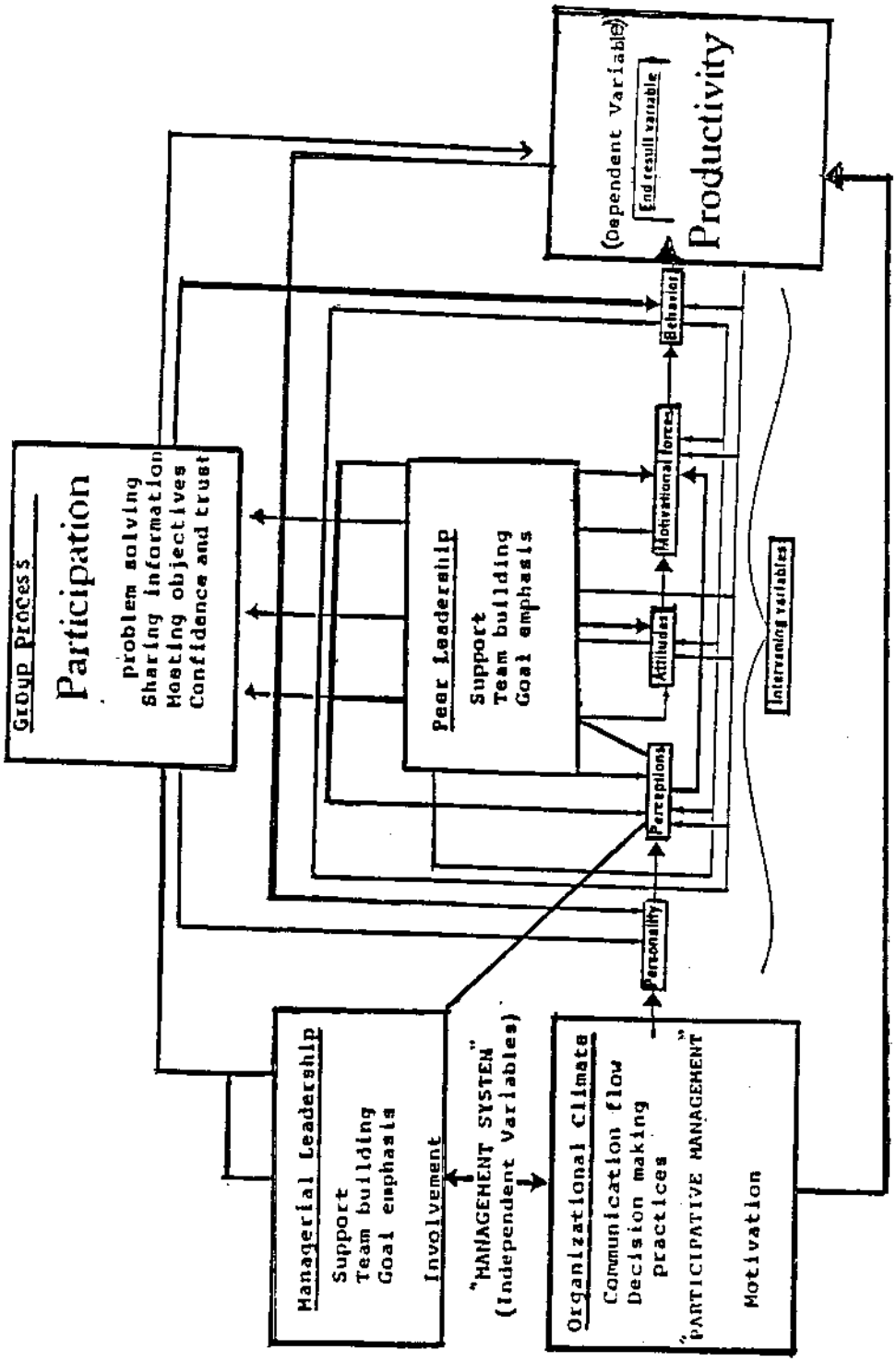

Fig. 4--The Quality Circle Experience: Research Model

TABLE VII

SUMMARY OPERATIONAL DEFINITIONS OF VARIABLES IN THIS STUDY

	Terms	Definition (Matched with research instrument definitions)
Dependent Variable	Productivity (1)	Productivity refers to the employee's perceptions of quantity and quality of work done in their divisions or departments, is well as the efficiency with which the work is done.
Organizational Climate Independent Variable Managerial Leadership	Support through leadership	The degree to which superiors are friendly, pay attention to what subordinates say and listen to their problems.
	Teamwork	The degree to which superiors encourage subordinates to work as a team.
	Goal-setting	The extent to which superiors encourage best efforts and maintain high standards.
	Help with work	The extent to which superiors held subordinates plan, organize and offer new work.
	Interaction	The extent to which a superior provides the members of a work group with information about decisions, and asks for opinions and ideas.
	Communication Process	The degree to which the subordinates know what is going on, and are given information to do their jobs well.
	Decision-making process	The degree to which the organization is interested in the individual's welfare.
	Concern for people	The degree to which the organization is interested in the individual's welfare.
	Influence process	The degree to which lower level supervisors and employees departmental policy.
	Motivational Forces	People in an organization generally work hard for money, promotions, and job satisfaction.
Intervening Variable	Peer leadership	The degree to which co-workers are supportive to each other, encourage team building and goal achievement.
	Group process (5,6)	The extent to which the workgroup plans together and coordinates its efforts, makes decisions, solves problems well, shares information about important events, meets objectives, and the extent to which individual employees have

TABLE VII.—continued

Terms	Definitions
Multinational organization (2)	A multinational organization is an organization with multi-nationalities; an organization where people from different cultural backgrounds engage in an organized manner to produce or to render a service.
Management System (1)	A management system is a pattern of practices, behaviors, and beliefs, as perceived by the survey respondents and expressed in terms of Likert's Organizational Climate factors of: support, team building, goal emphasis and motivation.
Quality Control Circles (As participatory Programs)	Quality Control Circles are small groups of employees doing similar things ore related work who meet regularly to identify, analyze, discuss their problems, investigate causes, recommend solutions, and take corrective actions when authority is in their purview.
Participatory Programs (4)	Participatory Programs refer to certain types of practice, behaviors and beliefs, as perceived by the survey respondents and expressed in terms of several factors such as participative behaviors, beliefs and practices including innformation-sharing, sensitive, and caring style of management.
Productivity (1,6)	Productivity refers to the employee's perceptions of the quantity and quality of work done in their divisions or departments, as well as the efficiency with which the work is done. It is measured by levels of performance and output data, also it is measured in this study by utilizing Likert's Organizational Climate Survey Scale.
Middle level management (2,6)	For the purpose of this study, middle level management is defined as the segment of an organization which includes personnel at all levels of authority found between but including neither the vice-presidential level nor the first level of supervision.

1. After Likert (9, p. 46) and Mott (12, p. 25).
2. After Phatok (14, p. 12).
3. After Likert (10, p. 5).
4. After Dewar (4, p. 2); Yager (18, p. 60).
5. After Likert (9, p. 46).
6. After Mott (12, pp. 25-34).

that fosters cooperation, mutual trust, and commitment, and be based upon a partnership of integrated interest.

Basically, the research model is a total, planned human resource approach to managing organizational productivity. Productivity is the dependnet variable in this study. Productivity is not often thought of as a managerial output. All too frequently when things go wrong for an organization, management blames the employees, the technology, the government, or anything or anyone but itself. Yet, as illustrated by the research model, management is clearly in control of the independent and intervening variables that have a significant bearing on the organization's productivity.

Chapter IV provides a systematic presentation of data processing and statistical tests. Also included are graphic presentations of the relationships between the variables in this study.

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CHAPTER IV

RESEARCH FINDINGS AND DATA ANALYSIS

Introduction

This chapter provides a systematic presentation of statistical tests, data processing and analysis, and graphic illustrations of the correlational matrices that show the relationships between the variables employed in this research model. In the procedure suggested by Dunham (6, p. 25), the functional sequence used in processing this survey data includes scoring, editing, analyzing, interpreting, and reporting the findings and feedback results from the survey participants.

The objective of this scientific inquiry is to contribute to the existing body of behavioral literature directed toward enhancing our understanding of working relationships within multinational organizations that employ participative management practices. This dissertation serves to explore and expand the theoretical basis of why and where Quality Control Circles (QCC) work and why and where QCCs might fail. When substantiated by research data, these findings can help to provide managers of both national and multinational organizations with the principles needed in order to analyze and select the optimal function of the

QCC models and adapt these aspects to their respective organizational practices.

Analysis of Data Findings According to Hypotheses

This section of the data analyses first repeats each hypothesis as stated in Chapter III. Following each statement is the analysis of data that pertain to the specific hypothesis.

Hypothesis One: Management Systems

Hypothesis one is stated as follows. "The most predominant management system in multinational organizations presently operating in Saudi Arabia will be classified (using Likert's Profile of Organizational Characteristics Survey) as falling within either system 1 (exploitive-authoritative) or system 2 (benevolent-authoritative) management system category."

Data Analysis Concerning Hypothesis One

Hypothesis one is rejected based on data presented in Tables VIII, IX, and Figure 5 of this study. The data in Table VIII show the mean scores of the perceived management system indices for respondents from each of the 10 surveyed multinational firms. The average mean scores range from 3.26 to 4.52, and the grand mean scores for each organization range between 3.53 and 4.12. These data indicate that the

TABLE VIII

GRAND MEAN SCORES FOR VARIABLES IN THE STUDY BY FIRMS

Management System	A(1)	B(2)	C(3)	G(4)	N(5)	Average Mean*	M(6)	O(7)	X(8)	Y(9)	Z(10)	Average Mean**	Total Grand Mean
Managerial Leadership													
Goal setting	3.90	3.58	4.00	3.80	3.73	3.80	3.90	4.20	4.45	3.90	4.35	4.16	3.98
Team Building	3.40	3.55	3.80	3.73	3.55	3.60	4.00	3.90	3.40	3.50	3.40	4.27	3.93
Support leadership	3.94	3.85	4.30	4.30	3.70	4.01	3.86	4.63	3.96	4.10	4.40	4.19	4.10
Interaction	3.70	3.32	3.79	3.53	3.80	3.72	3.98	4.80	4.45	4.85	4.50	4.52	4.12
Help with work	3.02	3.75	3.20	3.05	3.44	3.29	3.62	3.89	4.20	4.65	3.89	4.05	3.81
Mean Average (GM)	3.51	3.61	3.73	3.67	3.48	3.60	3.99	4.22	4.05	4.10	4.21	4.23	3.98
Organizational Climate													
Motivational forces	3.50	3.65	3.65	3.85	3.40	3.61	4.41	4.34	4.58	3.90	4.42	4.33	3.97
Concern for People	3.50	3.60	3.45	3.85	2.75	3.43	4.25	4.50	3.98	4.08	4.26	4.21	3.82
Communication process	3.35	3.25	3.30	3.45	2.98	3.26	4.70	4.50	4.10	3.60	4.50	4.28	3.77
Decision Making process	3.50	3.60	3.48	3.85	2.75	3.43	4.90	4.20	4.85	3.85	4.20	4.40	3.91
Influence process	2.55	2.55	2.60	2.57	2.65	2.58	4.80	4.70	4.60	3.80	4.50	4.48	3.53
Mean Average (GM)	3.28	3.33	3.29	3.51	2.90	3.26	4.61	4.44	4.42	3.84	4.37	4.34	3.79
Independent Variable Grand Mean	3.40	3.47	3.79	3.71	3.38	3.43	4.30	4.43	4.23	3.97	4.29	4.26	3.88
Likert's Management System Classification ***	3	3	3	3	3	3	4	4	4	3	4	4	3
Grand Mean Scores for Intervening and Dependent Variables													
Internal State (Intervening Variable)	3.41	3.49	3.69	3.62	3.70	3.50	4.08	4.05	4.22	4.12	4.10	4.11	3.80
Productivity (Dependent Variable)	3.62	3.66	3.58	3.68	3.32	3.57	4.16	4.45	4.26	4.20	4.12	4.20	3.88

*Average Mean = For American Corporations (A, B, C, and N alphabetic designation); the German Firms (G and Y) are similar to the American firms; so they are treated the same in this study.

**Average Mean = For Japanese Corporations (M, O, X, and Z).

***Likert (10) classified management systems on the following basis; system 1 = 1-1.99; system 2 = 2-2.99; system 3 = 3-3.99; system 4 = 4-4.99.

predominant management systems operating presently in the surveyed multinational organizations in Saudi Arabia are the consultative (system 3) or participative (system 4) management systems rather than the exploitive-authoritative (system 1) or benevolent-authoritative (system 2) management system as predicted by hypothesis one. Equally significant is the is the finding that the Japanese dominated firms (M, O, X, and Z), which are mostly involved in production of petrochemicals (the materials used to make plastic, paints, artificial fibers, fertilizers, varnishes, and more) scored highest on the management system dimensions as well as on other dimensions in this study such as the productivity and the internal state of the surveyed firms.

The data in Table IX summarizes mean scores resulting from one-way ANOVA tests. These test were used to explore the management systems and internal state dimensions of the surveyed firms in order to test for the degree of difference existing between the degree of participative management practices and their resulting productivity. The mean differences for managerial leadership and organizational climate (the two dimensions of management system, the independent variable, and group process, one dimension of the intervening variable) are statistically significant at the .05 level; the mean score for peer leadership (the other dimension of the intervening variable) is not statistically significant at the same level of confidence. This indicates that there is

TABLE IX

ANALYSIS OF VARIANCE FOR THE VARIABLES IN THE STUDY BY ORGANIZATION AND TEST OF SIGNIFICANCE BETWEEN MEANS

Variables in tne Research Model	Organization										
	A n = 17	B n = 20	C n = 17	G n = 15	N n = 16	M n = 14	O n = 13	X n = 17	Y n = 20	Z cn = 15	F-Ratio *
Managerial Leadership	3.51	3.61	3.73	3.67	3.48	3.99	3.42	4.05	4.45	4.21	2.99
Organizational Climate	3.28	3.33	3.29	3.51	2.90	4.61	4.44	4.42	4.27	4.37	4.76
Peer Leadersnip	3.23	3.32	3.51	3.37	3.20	4.05	4.00	4.18	4.10	4.08	1.26
Group Process	3.60	3.67	3.88	3.88	3.35	4.12	4.10	4.25	4.14	4.12	3.47

*The purpose of this test is to test the significance of the difference between means for the surveyed organizations. These data support Likert's (12, pp. 72-98) research findings concerning the same variables in this study. In addition, the mean scores on indices of management systems were found to be ablve the national norms compiled by Likert at the University of Michigan for 500 cases in the United States.

**Significant at p .05.

less variation due to chance fluctuations in the application of the principle of group participation at the group level rather than at the supervisory level among the surveyed organizations.

In general, the results from Likert's (10) instrument show the ability to discriminate between less effective and more effective organizations. The more effective organization is perceived by middle managers as being more participative in their approach toward system 4 than the less effective organizations (10). These differences are illustrated in Figure 5.

Looking at the specific variables in Figure 5, the middle managers from effective multinational organizations perceived their firms to be most toward system 4 in the variables of leadership process, goal setting, motivational forces, and control process through team building and least toward system 4 in the variables of decision-making process and comunication process. Figure 5 also illustrates the respondents' perceptions of the management systems of the ten selected multinational organizations in Saudi Arabia. The American- and the German-dominated firms are within the range of system 3 (consultative), while the Japanese dominated firms are within the range of system 4 (participative) on Likert's (11, pp. 8-10) continuum of management systems.

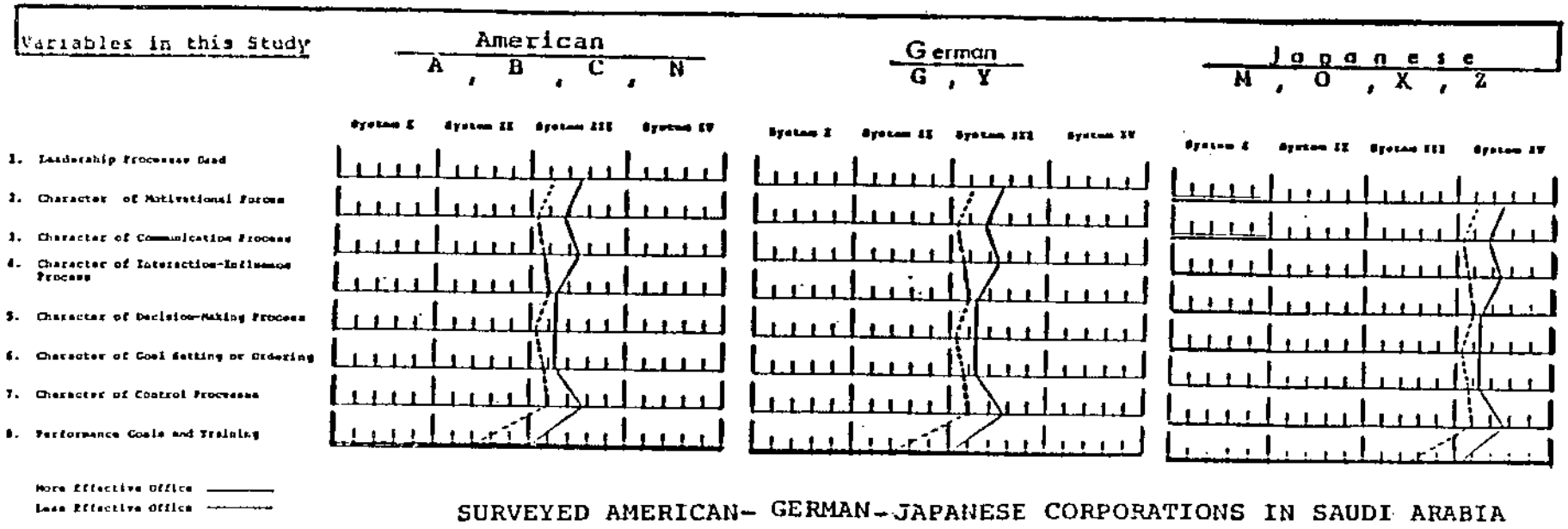

Fig. 5--Perception of management systems of the surveyed firms. [The more effective organization perceived as being more participative in its approach that did the less effective organization (10, pp. 54-60)]

Hypothesis Two: Relationships between Management Systems and Productivity

Hypothesis two is stated as follows. "A positive and statistically significnat relationship will exist between participatory programs which are similar to Quality Control Circles or a participative management system, and organizational productivity in the selected multinational organizations presently operating in Saudi Arabia."

Data Analysis Concerning Hypothesis Two

Hypothesis two is accepted (not rejected) on the basis of data presented in Tables X, XI, and Figure 6 of this research study. Also, the weight of evidence [including previous studies (2, p. 167; 3, p. 15)] supports the conclusion that group participation in decision making, team building, goal setting, the communication process, and supportive relationships often increase organizational productivity in the surveyed firms. The data in Table X present the correlation coefficients for the management system dimensions (managerial leadership and organizational climate) and the organizational productivity dimension; productivity is measured by the respondent employees' perceptions of (a) the quantity and quality of work done in their divisions or departments and (b) the efficiency with which the work is done.

The correlation coefficient data as shown in Table X were calculated in order to measure the direction and statistically significnt associations between the independent

TABLE X

CORRELATION COEFFICIENTS FOR INDEPENDENT VARIABLE (MANAGEMENT SYSTEM) AND PRODUCTIVITY (DEPENDENT VARIABLE)**

Management System (Independent Variable)	Productivity (Dep. Variable)	(Intervening Variable)***				
			Peer Leadership			Group
		Emphasis	Building	Support	Help-Work	Process
Managerial Leadership*						
Goal Emphasis or setting	0.64					
Team building or teamwork	0.63					
Support through leadership	0.49					
Interaction	0.63					
Help with Work	0.54					
Organizational Climate*						
Motivational Forces	0.63					
Concern for People	0.72					
Communication Process	0.79					
Decision Making Process	0.61					
Influence Process	0.48					

*Statistically significant at the .05 level.

**This test designed for measurement of strength, direction and statistical significance with more than 95 per cent confidence (p .05), a positive relationship was found between factors or variables.

***Holding or controlling for the possible influence of the peer leadership and group process dimensions of the management system dimensions so the strength of associations can be measured correctly between the management systems and productivity dimensions).

and dependent variables (management system and productivity). These findings clearly indicate the positive and statistically significant associations between the management system and productivity measures at a significance level of .05, with the exceptions of relationships between productivity and the measures of motivational forces and concern for people.

Further analysis and evaluation of the relationship between management system and organizational productivity were done with the use of multiple regression analysis. This analysis determines the proportion of variance in organizational productivity scores explained by (accounted for) the scores of the independent variable, management system. The multiple regression analysis indicates a positive relationship or effect between the measures of management system and productivity; 65 per cent of the variation in productivity is explained by linear regression on the management system dimensions. The F ratio of 14.65 (for the regression model as a whole) indicates that these linear relationships are statistically significant at the .05 level.

The data in Table XI show grand mean scores for management system, the independent variable, and productivity, the dependent variable, of the 10 responding multinational organizations. The purpose of this table is to permit the graphic construction of Figure 6 that illustrates the linear associations between the independent and dependent variables of this study. Figure 6 also shows the apparent clustering of

TABLE XI*

GRAND MEAN SCORES FOR MANAGEMENT SYSTEM AND PRODUCTIVITY BY FIRMS

Code**	Organization*** Reference	National	Management System Independent Variable	Productivity (Dependent Variable)
1	A	AM	3.40	3.62
2	B	AM	3.47	3.66
3	C	AM	3.79	3.69
4	G	GR	3.71	3.68
5	H	AM	3.38	3.70
Average			3.43	3.57
6	M	JP	4.10	4.16
7	O	JP	4.44	4.49
8	X	JP	4.23	4.2
9	Y	GR	3.97	4.20
10	Z	JP	4.29	4.10
Grand Mean			4.31	4.20

*The purpose of this table is to permit a graphic construction of Figure 6.

**Code reference for identity protection of firms.

***AM = American; GR = German; JP = Japanese.

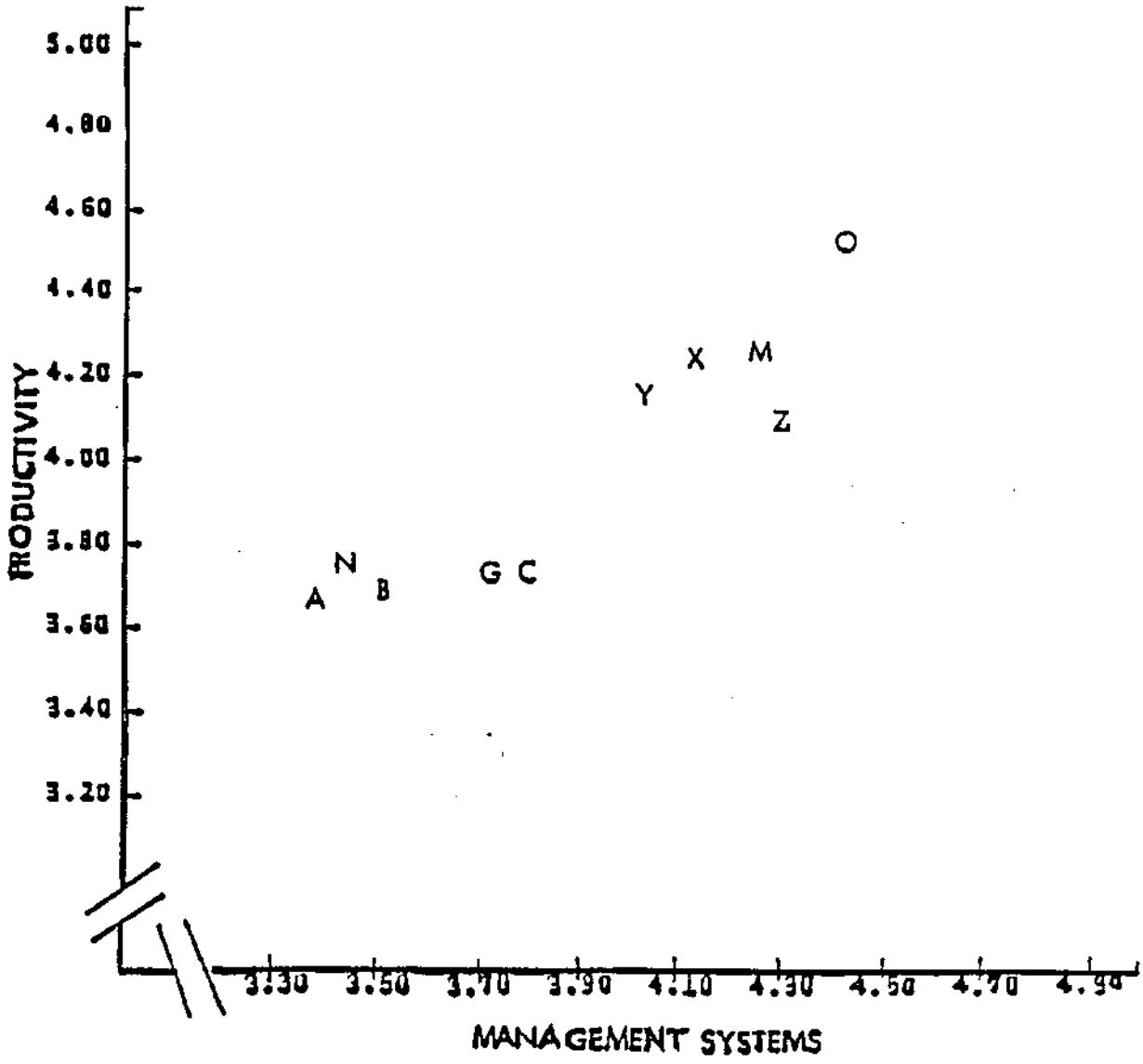

Fig. 6--Management systems mean scores and productivity.

firms on two sections of the graph. The practical implication which may be drawn from this finding indicates, however, that an increase in the level of participatory activity (measured by high scores on the management system dimensions) is associated with an increase in organizational productivity (measured by high scores on the productivity dimension).

Overall, the data findings of this study support the established notion (2, 3, 4, 15) about management systems that are approaching system 4. These notions are that such management systems tend to be more productive, have lower costs, and also have more favorable managerial attitudes than systems 1, 2, and 3.

Hypothesis Three: Relationship between Management Systems and Internal State of the Surveyed Firms

Hypothesis three is stated as follows. "There will be a positive correlation between participatory programs which are similar to Quality Control Circles or participative management systems, and the internal state of the firms surveyed for this study."

Data Analysis Concerning Hypothesis Three

Hypothesis three is accepted on the basis of data presented in Tables XII, XIV, XV, and Figure 7 of this study. In order to measure the strength and direction of the relationship between the management system dimensions and the internal state of the dimensions of the selected firms,

correlation coefficients were calculated for management system dimensions (goal setting, team building, support, interaction, help with work, motivational forces, concern for people, communication process, decision making, influence process) and the internal state of the selected firms' dimensions (goal emphasis, team building, support, help with work, and group process). The data in Table XII show the results of the correlation coefficient analysis, which indicate a positive and significant association for all 15 dimensions at a .05 significance level.

Further analysis of the relationship between management system and the internal state of the surveyed firms was done by multiple regression analysis. This analysis determines the proportion of variance in management system scores explained by the scores of the intervening variable, internal state, for the surveyed firms.

The data in Table XIII present the results of the multiple regression analysis that was applied to the sample data to evaluate the dependency of measures of the internal state of the selected firms on management system dimensions. The multiple regression analysis ratios confirm the positive relationship between these variables. The regression square ratios show that 56 per cent of the variation in peer leadership and 62 per cent of the variation in group process are explained by linear regression on the management system dimensions. The F ratios indicate that these linear

TABLE XII

CORRELATION COEFFICIENTS FOR INDEPENDENT VARIABLE (MANAGEMENT SYSTEM) AND INTERVENING VARIABLE (INTERNAL STATE) OF THE SURVEYED FIRMS **

Management System (Independent Variable)	Productivity*** (Dep. Variable)	(Intervening Variable) Peer Leadership				Group Process
		Emphasis	Building	Support	Help-Work	
Managerial Leadership*						
Goal Emphasis or setting		0.49	0.55	0.66	0.47	0.63
Team building or teamwork		0.48	0.56	0.50	0.54	0.62
Support through leadership		0.47	0.48	0.60	0.47	0.65
Interaction		0.41	0.56	0.33	0.48	0.56
Help with Work		0.53	0.66	0.55	0.59	0.52
Organizational Climate*						
Motivational Forces		0.39	0.40	0.39	0.29	0.49
Concern for People		0.41	0.49	0.28	0.40	0.47
Communication Process		0.57	0.66	0.45	0.59	0.56
Decision Making Process		0.41	0.49	0.28	0.30	0.55
Influence Process		0.35	0.37	0.40	0.24	0.48

*Statistically significant at the .05 level.

**This test designed for measurement of strength, direction and statistical significance of associations between factors or variables.

***Holding or controlling for possible influence of productivity dimension on the management system dimensions so, more accurate measurement can be achieved.

TABLE XIII

MULTIPLE REGRESSION ANALYSIS FOR EVALUATING THE DEPENDENCY OF MEASURE OF INTERNAL STATE OF THE SELECTED FIRMS ON MANAGEMENT SYSTEMS DIMENSIONS

Internal State of the Firms (Dependent Variable)	Multiple Regression	Regression Square (R2)	F-ratio
Peer Leadership	0.77	0.56	7.41*
Group Process	0.82	0.62	8.55*

*Statistically significant at the .05 level.

associations are statistically significant at the .05 level. These results confirm Likert's (11) research findings that peer leadership and group process contribute to the strength and effectiveness of system 4 management. The organizational climate, managerial leadership, group process, and peer leadership variables are clearly in the control of management's efforts to create a work environment that fosters cooperation, mutual trust, and commitment, and which is based upon a partnership of integrated interest.

The data in Table XIV present grand mean scores for management system, the independent variable, and the internal state of the surveyed firms, the intervening variable, for the respondents from the 10 multinational firms. The purpose of this table is to permit construction of the graphic construction of Figure 7 that illustrates the linear associations between these independent and intervening variables. Figure 7 shows an apparent clustering of firms in two sections of the graph; this indicates that, in the

TABLE XIV *

GRAND MEAN SCORES FOR MANAGEMENT SYSTEMS (INDEPENDENT VARIABLE) AND INTERNAL STATE OF THE SURVEYED FIRMS (INTERVENING VARIABLE)

Organization *** Code **	Reference	National	Management Variable (Independent Variable)	Internal State of Firms (Intervening Variable)
1	A	AM	3.40	3.41
2	B	AM	3.47	3.49
3	C	AM	3.79	3.69
4	G	GR	3.71	3.62
5	N	AM	3.38	3.70
Average			3.43	3.50
6	M	JP	4.30	4.08
7	O	JP	4.43	4.05
8	X	JP	4.23	4.22
9	Y	GR	4.36	4.12
10	Z	JP	4.29	4.10
Average			4.31	4.11
Grand Mean			3.93	3.80

*The purpose of this table is to permit a graphic construction of Figure 7.

**Code reference for identity protection of firms.

***AM = American; GR = German; JP = Japanese.

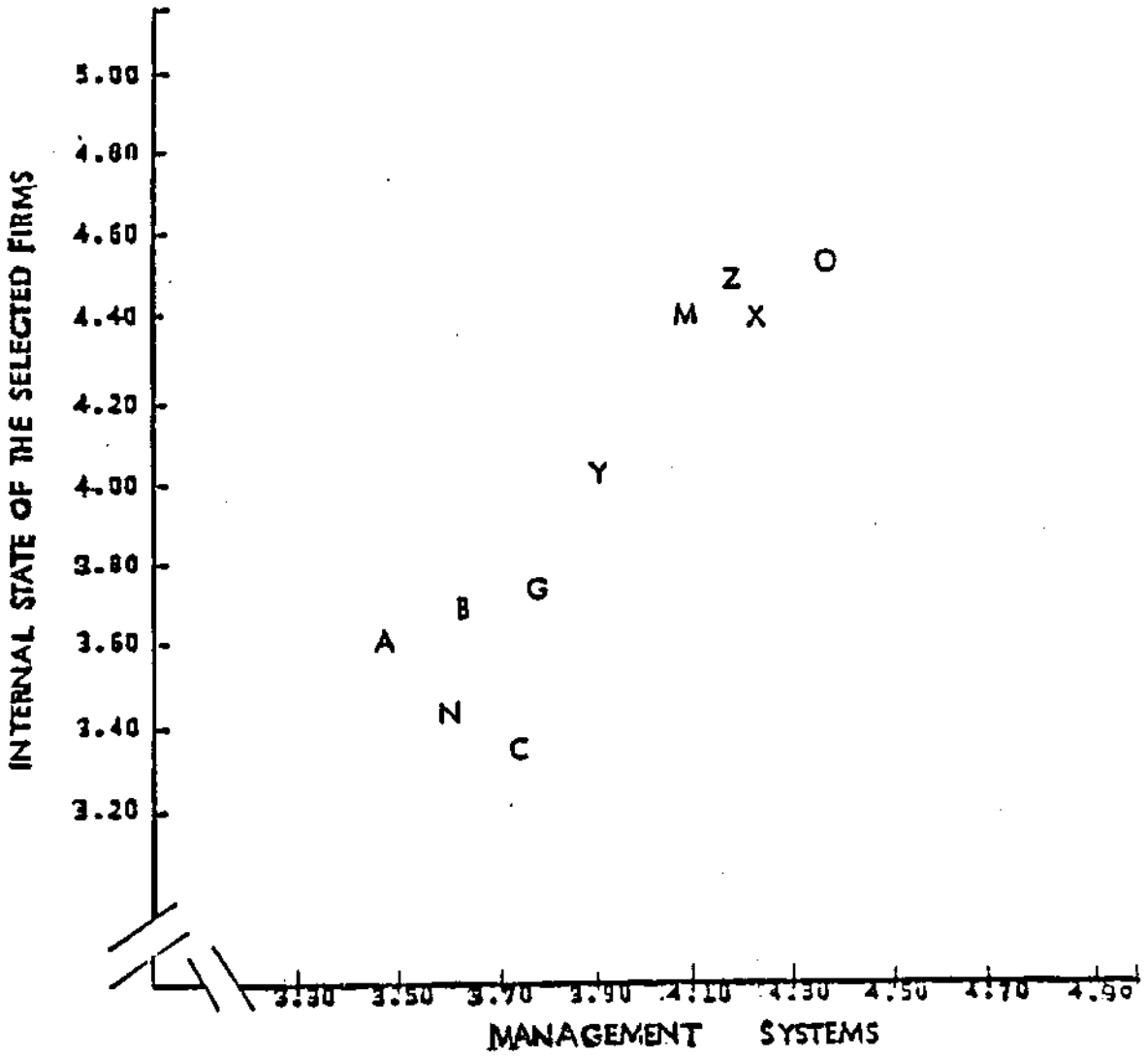

Fig. 7--Management system mean scores and internal state of the surveyed firms.

majority of cases, the perception of a more participative group management system (high scores on the management system dimensions) is associated with the perception of a higher internal state of the surveyed firms, as measured by high scores on the peer leadership and group process dimensions.

Hypothesis Four: Relationship between Productivity and Internal State of the Surveyed Firms

Hypothesis four is stated as follows. "A positive correlation will exist between the internal state of the surveyed firms and the productivity of these organizations."

Data Analysis Concerning Hypothesis Four

Hypothesis four is accepted on the basis of data presented in Tables XV, XVI, and Figure 8 of this study. The same statistical and graphic procedures which were used to substantiate hypotheses two and three are used to assess the accuracy of the prediction made in hypothesis four.

The correlation coefficients were calculated for the internal state of the selected firms and the productivity dimensions to determine the strength, direction, and statistically significant associations between the dependent variable, dimension productivity, and the intervening variable dimensions (goal setting, team building, support, help with work, and group process). The data in Table XV show the correlation coefficient analysis, which indicates a positive and significant association for all dimensions associated

TABLE XV

CORRELATION COEFFICIENTS FOR INTERNAL STATE OF THE SELECTED FIRMS AND PRODUCTIVITY DIMENSIONS*

Internal State of the Selected Firms Dimensions (Intervening Variable)	Productivity	
	At .05 level	At .01 level
Peer Leadership		
Goal Emphasis	0.59**	0.47***
Team Building	0.58**	0.43***
Support	0.41**	0.27***
Help with Work	0.54**	0.34***
Group Process	0.65**	0.54***

*This test is designed for measurement of strength, direction, and significance of associations between the dependent and internal variables' dimesions (5).
**Statistically significant at the .05 level.
***Statistically significant at the .01 level.

with the productivity dimensions at both the .05 and .01 significance levels.

Further evaluation of the relationship between productivity and internal state of the surveyed firms was done with multiple regression analysis. This analysis determines the proportion of variance in productivity scores explained by the internal state of the surveyed firm's scores.

The multiple regression analysis indicates positive and statistically significant relationships between the measures of productivity, the dependent variable, and the internal state of the surveyed firms, the intervening variable of the research model. The results indicate that 52 per cent of the variation in productivity scores is explained by linear regression on the internal state of the surveyed firm's

scores. An F ratio of 8.25 indicates that these linear associations are statistically significant at the .05 level. The practical implication which may be drawn from this finding indicates that true and lasting productivity gain can be realized only through the effective utilization of people through group participation in decision making, problem solving, team building, goal setting, and communication process, and also through the effective utilization of the system within which they operate.

The data in Table XVI present grand mean scores for measures of productivity, the dependent variable, and the internal state of the surveyed firms, the intervening variable, of the 10 responding multinational firms. The purpose for this table is to permit a graphic construction (Figure 8) that illustrates the linear associations between the dependent and the intervening variables in this study. Figure 8 shows apparent clustering of firms in two sections of the graph. It appears clear that the Japanese-dominated firms (7, 8) (O, M, X and Z) have higher scores than the American and German firms (14) (A, B, N, C, G, and Y) on productivity and the internal state of the dimensions of the surveyed firms. Overall, these results support the established notion (2, 12, 13) that group participation in decision-making, problem-solving, goal setting, team

TABLE XVI

GRAND MEAN SCORES FOR INTERNAL STATE AND PRODUCTIVITY OF THE SURVEYED FIRMS*

Organization*** Code**	Reference	National	Internal State (Intervening Variables)	Productivity (Dependent Variable)
1	A	AM	3.41	3.62
2	B	AM	3.49	3.66
3	C	AM	3.69	3.58
4	G	GR	3.62	3.68
5	N	AM	3.31	3.70
Average			3.50	3.57
6	M	JP	4.08	4.16
7	O	JP	4.06	4.45
8	X	JP	4.22	4.26
9	Y	GR	4.12	4.20
10	Z	JP	4.10	4.12
Average	*		4.13	4.20
Grand Mean			3.93	3.88

*The purpose of this table is to permit a graphic construction of Figure 9.

**Code reference for identity protection of firms.

***AM = American; GR = German; JP = Japanese.

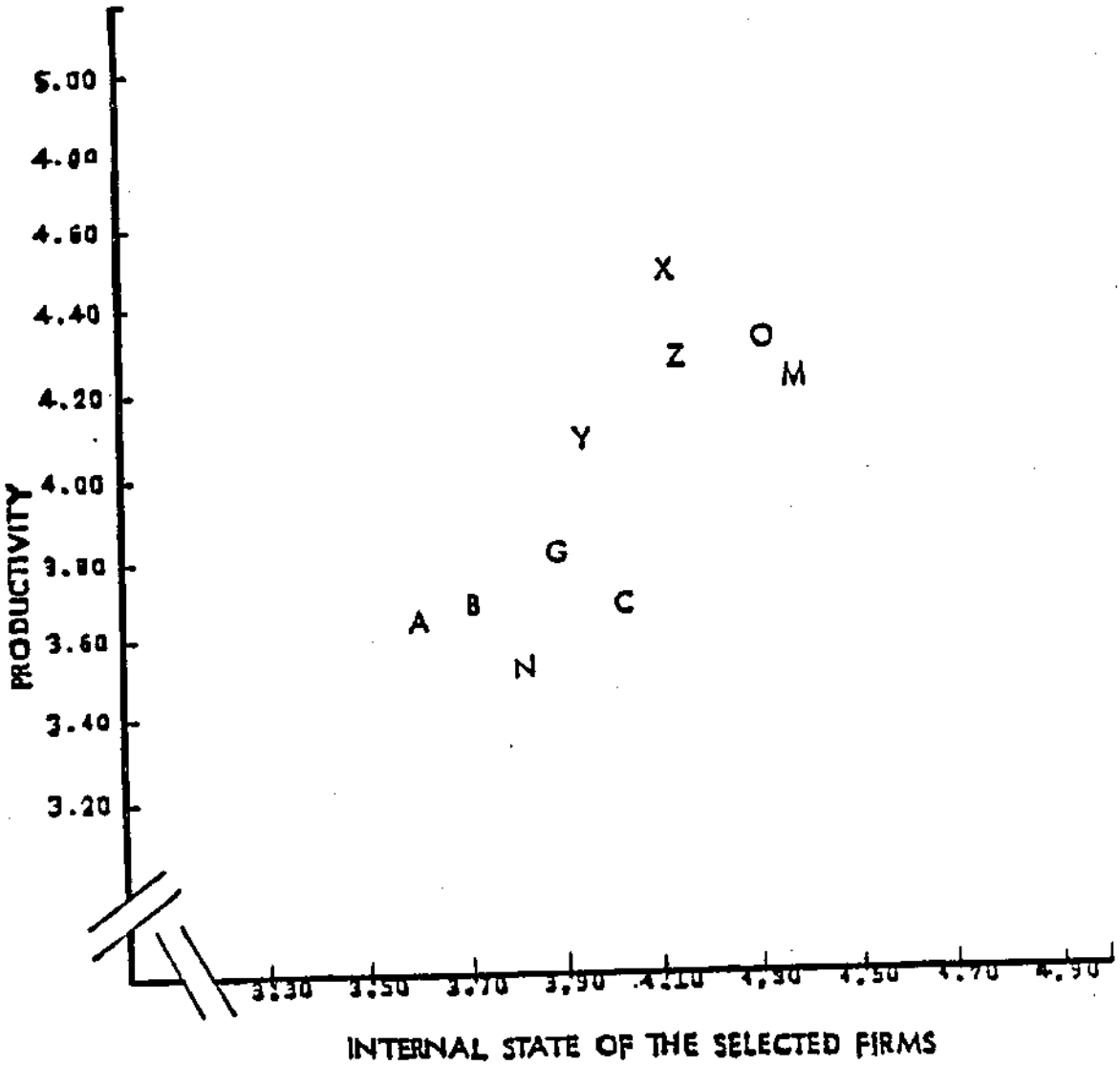

Fig. 8--Productivity and internal state of the firms.

building, and communication process often increase organizational productivity.

Additional Supporting Analysis

The purpose of this section is to provide additional supporting analysis to the research findings. This analysis examines the relationship between participatory programs and organizational productivity and is accomplished using company-reported productivity growth rates from the surveyed firms that operate in Saudi Arabia. These were obtained from actual press releases and reports (14, 7, 8) by the responding companies. In addition, a discussion of several factors that contribute to Japan's success in Saudi Arabia will be presented.

Productivity Growth Rates of the Surveyed Firms

There are three reasons that constitute the rationale for initiating additional supporting analysis for this study. The first reason for this analysis is to check, verify, and confirm the research findings concerning the level of productivity growth rates for the surveyed firms that operate in Saudia Arabia. The second reason is to offer additional evidence concerning the relationship between the management practices and organizational productivity in the surveyed firms. Table XVII and Figure 9 present actual company acknowledged productivity growth rates of the American, German, and Japanese firms in this

TABLE XVII

ANNUAL PRODUCTIVITY GROWTH REPORTED BY SURVEYED AMERICAN-JAPANESE GERMAN CORPORATIONS IN SAUDI ARABIA **

Years	American				Average Mean	German		Average Mean	Japanese				Average Mean
	A	B	C	N		G	Y		M	O	X	Z	
1978-1979	3.25	2.10	3.25	2.90	2.92	3.10	4.10	3.60	6.25	6.75	6.45	6.75	6.55%
1979-1980	N/A	3.10	2.85	N/A	3.10	2.70	4.86	3.78	6.50	6.80	6.85	7.20	6.84
1980-1981	3.50	2.91	2.77	3.55	3.14	N/A	4.25	4.25	6.51	N/A	6.71	6.75	6.80
1981-1982	3.20	3.25	N/A	3.45	3.27	4.10	4.20	4.15	6.75	6.88	6.35	N/A	6.65
1982-1983	3.10	2.34	2.88	3.20	2.88	4.20	N/A	4.20	6.85	6.45	6.25	6.88	6.60
Average Productivity* Growth Rates	3.23	2.75	2.99	3.07	3.06	3.40	4.36	3.88	6.57	6.57	6.52	6.82	6.68

*Productivity is output divided by input, or the total physical or dollar volume of output divided by the man-hours of input for a given time span.

**Source: information about productivity was collected from companies and other informed sources in Saudi Arabia and New York(14).

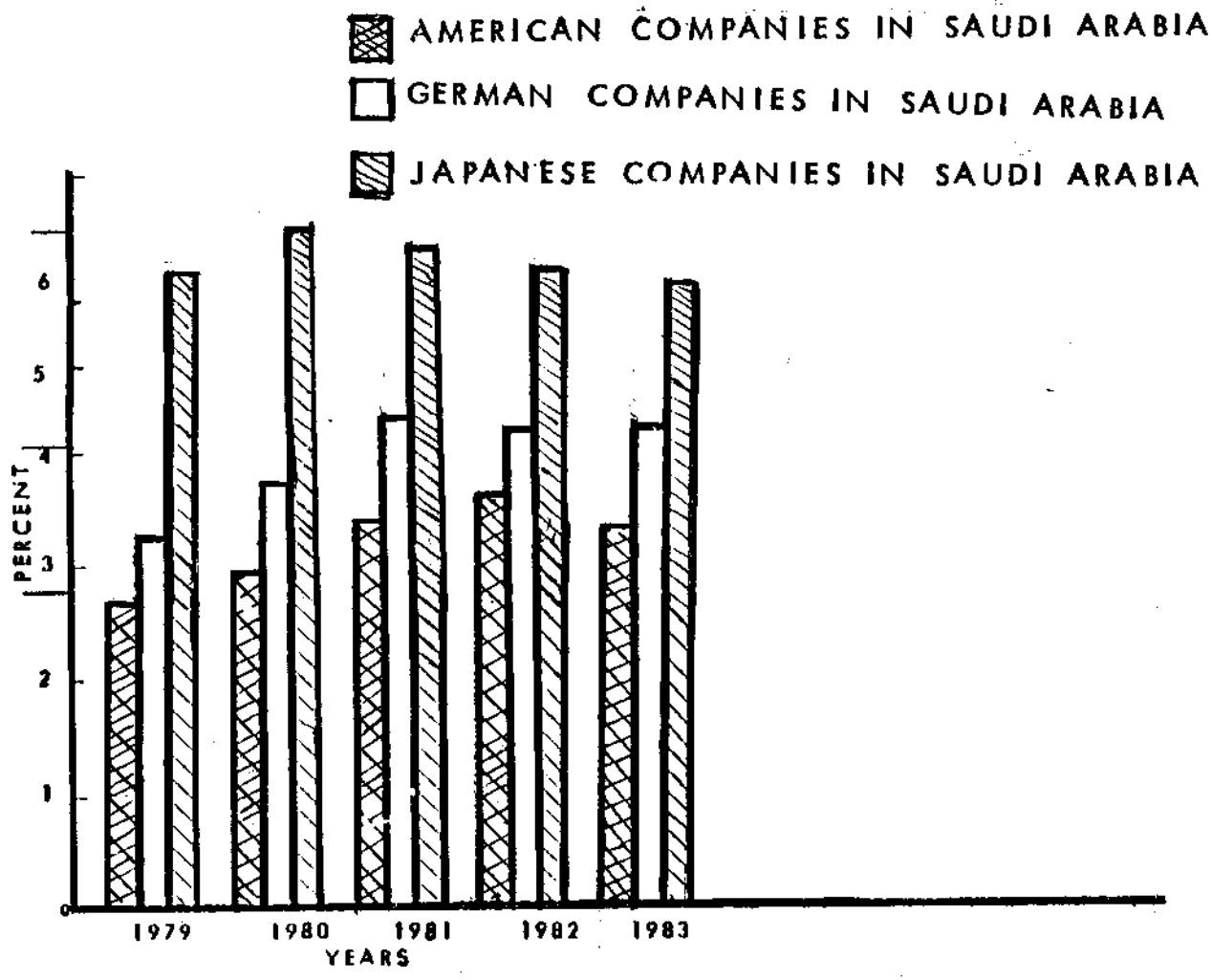

Fig. 9--Annual productivity growth as reported by American-Japanese companies. Information: Different sources such as the companies themselves in Saudi Arabia (14).

study. The results show overwhelming support for the established notion that much of Japan's success in Saudi Arabia can be attributed to the Japanese participative management philosophy. The Japanese firms (14) have the highest productivity growth rate, averaging 6.68 per cent a year; while the American and the German firms (14) have notably lower productivity growth rates, averaging 3.06 to 3.88 per cent a year.

The third reason for presenting the actual productivity growth rates for the surveyed organizations operating in Saudi Arabia is to show that it is possible to obtain comparable results by the use of perceptual measures of organizational productivity in conjunction with Likert's (10) and Mott's (13) measures of organizational productivity. These findings point to the usefulness of perceptual measures to determine not only the level of organizational productivity but also to focus attention on a host of other factors (such as better work methods and techniques). The point of this discussion is to put in perspective the critical dimensions that are involved in organizational productivity.

Japan's Success in the Saudi Arabian Market

This section presents additional supporting analysis concerning trade relations between Saudi Arabia and Japan.

In addition, this section examines several factors that contribute to Japan's success in the Saudi Arabian market.

Trade relations between Saudi Arabia and Japan.--Trade relations between Saudi Arabia and Japan are constantly accelerating. The growth rate of Japanese investment in and exports to Saudi Arabia reached 13.7 per cent in 1980 and 12.6 per cent in 1981; Saudi trade with all world nations decreased by 1.2 per cent (14, p. 35). In 1982, Japan's percentage share of total Saudi trade links was as high as 19.5 per cent (14, p. 35).

Japanese firms are successful not only in selling goods to the Saudi market, but also, increasingly, in obtaining Saudi government contracts. As noted in a recent survey by the Saudi Arabia Ministry of Planning,

> At the same time as diversifying its development projects, the Saudi government is employing more Japanese and European contrators and suppliers. In the market-place expensive consumer wares from the far east, including China (mainland), are doing well, as are Japanese domestic appliances and motor vehicles. The Japanese in particular give systematic attention to the market and are highly successful in promoting their products in Saudi Arabia (14, p. 38).

Factors attributing to Japan's success in Saudi Arabia.--What is it that makes the Japanese so successful in the Saudi Arabian market? Four factors are found to contribute to Japan's success in Saudi Arabia. First, since 1973, Japan has engaged in an extensive campaign to win Arab markets. The turning point was November 22, 1973, when the

Japanese government issued an official statement in support of the Arab world position and followed it by sending a large group of trade representatives and official visitors to Saudi Arabia to affirm Japan's political and economic commitment to the Arab nations (7, p. 105).

A second factor is the fact that Japan is not a military power and consequently does not pose a threat to Arab National interests. Furthermore, the Arabs are highly impressed by the rapid development of the Jaspanese economy since World War II, and Arabs also believe that the Japanese culture is closer to their own than are the cultures of the United States and Europe (7, p. 105).

Adaptation is a third factor for Japan's success in the Saudi Arabian market. For instance, many Japanese executives are learning the Arabic language in order to communicate directly with Arab customers. In addition, they are designing calculators that incorporate keys which use Arabic symbols (7, p. 106) and are modifying their products to fit the unique conditions in Saudi Arabia.

The Japanese automobile industry represents a typical example of this third factor for Japan's success. Automobiles are now Japan's largest export industry [in 1980, auto exports reached $18-20 billion, an increase of 7 per cent over the previous year]. The largest importer of Japanese cars in 1980 was the United States and Saudi Arabia

was second. The Japanese, however, are not content to sit back and watch the figures grow; they have adapted their automobiles to suit desert conditions, and they also realize that if they are to maintain their favorable position in the world auto market they must improve their sales and services. As a result, Japanese car imports have continued to soar in the Arab world (7, p. 106).

A fourth catalyst to favorable Saudi-Japanese relations is noted in a recent survey by the Saudi Arabia Ministry of Planning as the primary reason for Japan's effectiveness in the Saudi Arabian market.

> The Japanese are patient and they receive more government backing. Also, in Japan you do not have five construction companies competing with each other. You have a Japanese government backed mission and they are able to spend two months or two years working out a deal. Japanese normally compete as an industry and that gives them a lot of clout. Americans compete with each other instead of going together (14, p. 39).

Much of Japan's success in Saudi Arabia has been attributed to the Japanese executives' marketing strategy, which identifies target industries such as construction, electronic systems, and petrochemicals (8, p. 99). In addition, the Japanese have an ability to relate well to the government and a willingness to take risks and follow a flexible investment and exports policy (7, p. 101). Finally, Japanese managers have established a respected reputation for reliability, honesty, productivity, and thoroughness (7, p. 102).

Summary Comparison of Likert's Model and the Research Model

Table XVIII presents comparisons of the research findings from this study with those from Likert's (10, 11). This comparison of models (see also Figures 10 and 11) shows a notable degree of consistency.

Summary of Data Findings from this Research Study

Five significant findings emerged from this study. First, the data show that the predominant management systems operating presently in Saudi Arabia among the multinational organizations are comparable to either Likert's (10) consultative or participative (systems 3 or 4) management systems rather than the exploitive-authoritative or benevolent-authoritative (systems 1 or 2) management systems.

Second, the weight of data from this study supports the conclusion that group participation in the factors of decision-making, team-building, goal-setting, and the communication processes often increases group performance and organizational productivity in most of the selected multinational firms operating in Saudi Arabia. Most importantly, the findings indicate than an increase in the level of participatory activity is associated with an increase in organizational productivity.

TABLE XVIII

COMPARISON BETWEEN THE RESEARCH FINDINGS AND LIKERT'S FINDINGS

The Research Findings	Likert's Research Findings
1. Inspection of Figure 10 (Research Model) shows that the highest regression analysis were found to be between the factors of "Productivity" and "Managerial Leadership."	1. Inspection of Figure 11 (Likert's Model) shows that the highest regression analysis reported by Likert to be between the factors of "Peer Leadership" and "Group Process" (10, p. 8).
2. In general, results of the regression analysis were found to be higher than those reported by Likert. In addition, these data support Likert's (11, pp. 8-10) research findings which indicate, that an increase in the level of participatory activity is associated with an increase in productivity.	2. In general results of the regression analysis were found to be lower than those reported in this dissertation (as a whole).
3. The multiple regression analysis shows positive direction and dependency relationship existing between the variables, with 56, and 62 per cent of the variation in productivity are explained by linear regression on managerial leadership and organizational climate. Furthermore, 56 and 52 per cent of the variation in productivity are explained by Linear regression on peer leadership and group process respectively.	3. Multiple regression analysis shows 42 per cent of the variation in the organizational climate is accounted for by managerial leadership. Furthermore, 49 and 47 per cent of the variation in productivity are explained by linear regression on peer leadership and group process; respectively (10, pp. 46-48).
4. The mean scores for management systems indices in Saudi Arabia were found to be above the national norms in (10, p. 48) the United States with 3.05 the lowest score and 4.85 was the highest mean score.	4. The mean scores for management systems indices in the United States (The national norms were compiled by Likert at the University of Michigan), with 2.92 the lowest score and 3.89 were the highest mean scores (12).
5. The results of this study show overwhelming support for the established nation that much of Japan's success in Saudi Arabia has been attributed to the Japanese participative management philosophy (14, pp. 35-38). In addition, the results show that the QCCs can be an effective tool with which to effect genuine productivity and work quality improvement in Saudi Arabia.	5. Likert's research findings (11, p. 8-10) show that group members adopt behavior similar to that practiced by their superiors. The findings support the idea that management systems which are leaning toward system 4 are more productive, have lower costs and yield more favorable attitudes. The trend worldwide is for more participative systems rather than autocratic systems (10, pp. 45-48).

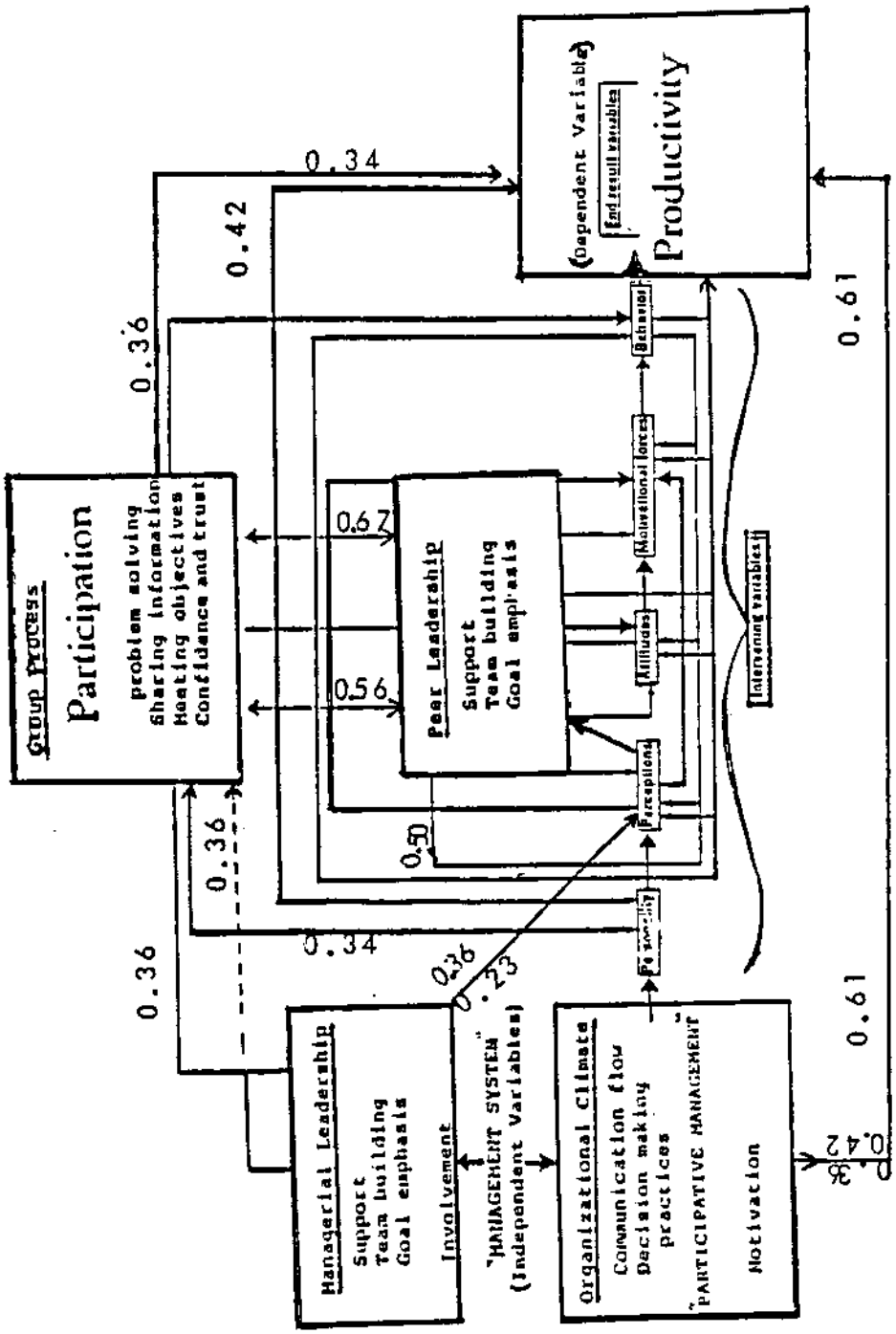

Fig. 10--The quality circle experience: The research model for this study; this model presents relationships and the dependency between variables in this study.

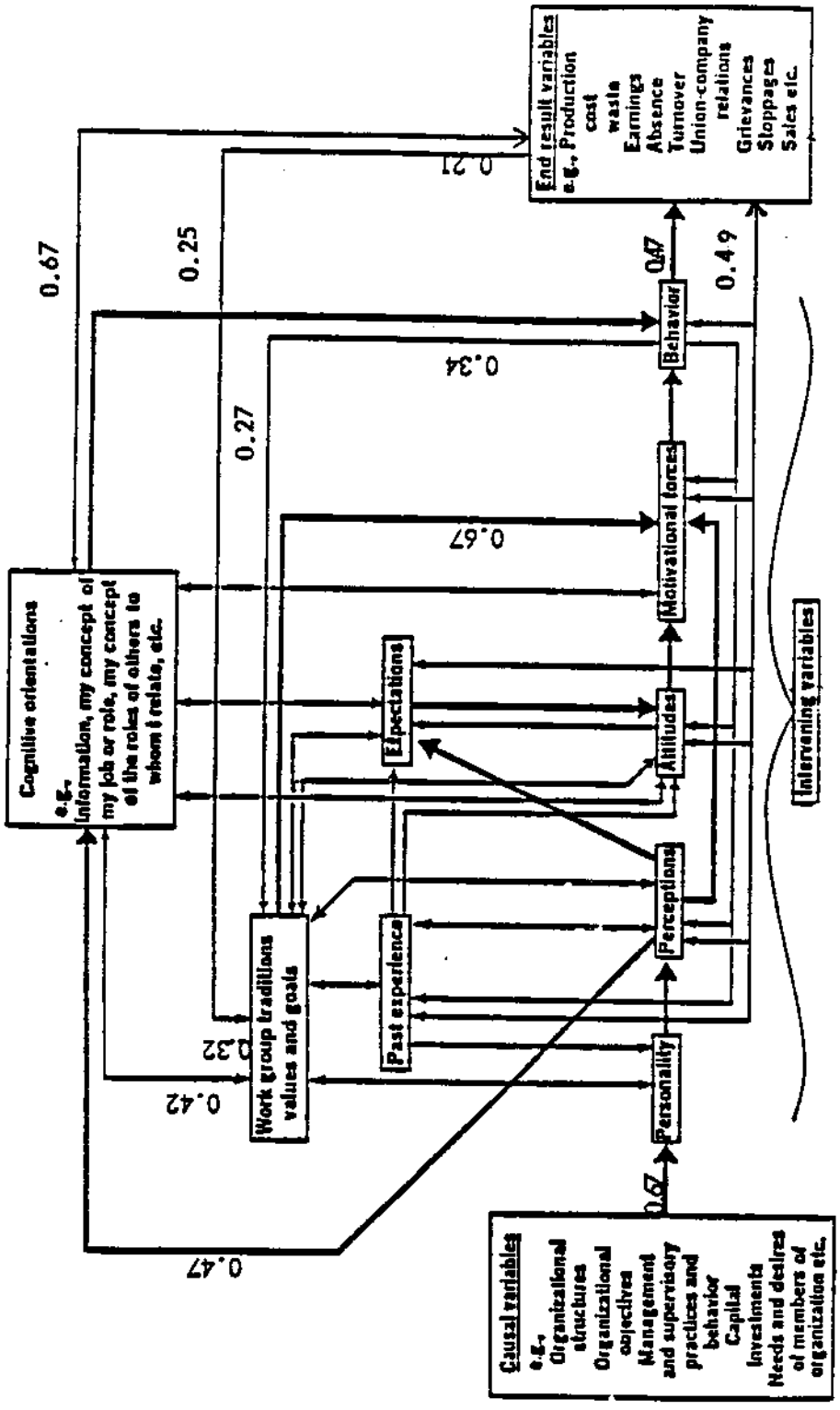

Fig. 11--Likert model of System 4. Schematic pattern of relationships between causal, intervening, and end-result variables, from Likert (8, p. 8).

Third, statistical analysis of the sample data indicates that a positive association exists between the management system (independent variable) and the internal state of the surveyed firms (intervening variable). This perception is measured by high mean scores on the management system and the internal state of the surveyed firms' dimensions.

Fourth, these data support Likert's (10, 11) research findings which indicate that an increase in the level of participatory activity is associated with an increase in organizational productivity. The findings also support Likert's thesis that management systems which are approaching system 4 tend to be more productive, have lower costs and yield more favorable attitudes than system 1, 2, and 3. System 4, therefore, is an optimal and planned human resource approach to managing an organization.

Finally and equally significant is the findings that most of the Japanese firms (14) in this study (M, O, X, and Z) are involved in the production of petrochemicals. These firms scored the highest means on the management system dimensions as well as on the produtivity dimension. Overall, these results show overwhelming support for the established notion (7, 8, 14) that much of Japan's success in Saudi Arabia can be attributed to the Japanese participative management philosophy. The Japanese managers encourage self-motivation; their philosophy is that a productive worker is a happy worker. This is in sharp contrast to the

typical American belief that happy workers are productive workers; employees are viewed as resource that, if cultivated, will yield economic returns to the firm regardless of where and when these conditions exist. Furthermore, the results of this study show that QCCs are an effective tool with which to affect genuine productivity and work quality improvement in Saudi Arabia.

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CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FUTURE STUDY

This chapter presents a summary of this study that includes the purposes, methodology, and the findings of the study. Conclusions are also drawn based on these findings. In addition, the purpose of this chapter is to present the results of the study in such a way that others can build on the findings as a basis for future investigations.

Summary

This work served two purposes. The first was to identify the management systems of ten selected multinational organizations that are presently operating in Saudi Arabia. The second purpose was to investigate the effects of implications of quality control circles as participatory programs affecting organizational productivity in the ten selected multinationals. The respondents from these organizations were assumed to be a representative sample of middle managers from the 100 multinational firms (7, p. 25) operating in Saudi Arabia because they have been randomly selected and surveyed.

Primary data were obtained via a mailing of organizational questionnaires. To facilitate data collection,

one-hour group sessions were held with coordinators of the individual administrative units of the ten sample organizations. These coordinators were assigned by their respective top management hierarchies and were given an explanation of the rationale for and intended use of the study.

The two instruments employed in this dissertation are Likert's (3, pp. 46-47) "Profile of Organizational Characteristics" and Mott's (6, pp. 25-34) "Characteristics of Effective Organization." These two questionnaires were used (a) to classify the type of management system existing in each multinational organization in Saudi Arabia and (b) to examine the effect of each organization's management style on each organization's productivity.

The fourteen-page length of the questionnaire may have affected the response rate of 54 per cent. However, a final sample of 184 out of 340 middle managers was determined to be of sufficient size so as not to preclude meaningful analysis.

Several significant findings emerged from this work. First, the research findings show that the predominant management systems of the multinational organizations operating presently in Saudi Arabia are the consultative or participative (systems 3 or 4) management systems rather than the exploitive-authoritative or benevolent-authoritative (systems 1 or 2) management systems (4, p. 8).

Second, the weight of evidence from this dissertation supports the conclusion that group participation (in the factors of decision-making, team-building, goal-setting, and communication processes) often increases group performance and organizational productivity in the selected multinational firms in Saudi Arabia. Most importantly, the study findings indicate that an increase in the level of participatory activity is associated with an increase in organizational productivity.

Third, statistical analysis of the data indicates that a positive association exists between management system, which is the independent variable, and the internal state of the surveyed firms, which is the intervening variable. This perception is measured by high mean scores on the management system and the internal state of the surveyed firms' dimensions.

Fourth, these data support Likert's (5, pp. 87-92) research findings which indicate that an increase in the level of participatory activity is associated with an increase in organizational productivity. Also supported is Likert's (5, pp. 52-54) thesis that management systems which are approaching system 4 tend to be more productive, have lower costs, and yield more favorable attitudes than systems 1, 2, and 3. System 4, therefore, is an optimal and planned

human-resource approach to managing an organization (3, p. 48).

Conclusions

The preceding summary of the research findings suggests that it is possible to draw the following conclusions from the findings of this study:

First, the introduction of participatory programs similar to quality control circles into an organization further requires the introduction of multifaceted changes in person-job relationships. These changes include training in a variety of new skills, a greater degree of goal setting and feedback for specific tasks, group approaches to problem-solving, and the structuring of communication flow between workers and management.

Second, quality control circles have high transferability as a method of initiating employee participation among the selected multinational organizations in Saudi Arabia. When properly run, QCCs should yield benefits to employer and employee alike.

Third, so long as QCC activity is taken seriously and deals with solvable problems, there should be improvments in productivity, quality, and morale. Furthermore, as long as the QCC members keep management informed, there should be no reason for management to feel threatened by QCC activity.

Fourth, a practical conclusion drawn from this study indicates that an increase in the level of participatory

activity is associated with an increase in productivity in the selected multinational organizations in Saudi Arabia.

Fifth, productivity programs that do not change rules, rewards, management practices, and the job itself are doomed to failure. Management needs to begin to unlock the latent abilities of its empoyees by terminating the adversarial relationship of the past and by establishing a constructive relationship based on group participation, mutual respect, and interdependence of interests. It is unrealistic to expect employees to be concerned with productivity when management excludes the employees from the decision-making process. How can anyone be expected to be committed to improving productivity without some personal benefit? Management cannot simply wish or demand productivity improvement. This is unrealistic in today's work environment.

Finally, the research findings indicate that people of all races, colors, and nationalities have a universal desire to participate in the decisions that affect their lives. In addition, the results of this study reveal an overwhelming support for participative management systems rather than autocratic management systems.

Implications of the Research Findings

There are three levels upon which the implications of the findings of this study can be discussed. These levels

are an empirical results-oriented level, a philosophic-idealogical level, and an economic-global level.

On the empirical result-oriented level, this study shows that it is possible to use Mott's (6, pp. 25-34) perceptual measures of organizational productivity effectively in conjunction with Likert's (3, p. 46) classification of management systems. In addition, this study shows that it is possible to use human organization dimensions in a multi-national setting and obtain empirical results similar to those found in the United States or Japan.

The second implication of this study is from a philosophical viewpoint. In order to show results, productivity improvement has to be planned, monitored, and directed. Management and the organization system must first undergo significant change before productivity of the U.S. labor force can be unlocked; "lip service" and piecemeal approaches are no longer viable. True and lasting productivity gains can be realized only through the effective utilization of people and the system within which they operate. Productivity improvement is more than simply a matter of capital investment and labor. It involves a host of other factors such as better work methods and techniques, the increased use of innovation and technology, quality control, motivation, and the utilization of proven

management techniques. The point of this implication is to put into perspective the critical dimensions that are involved in organizational productivity.

The third implication of this study is approached from the economic or global level. World dominance by American multinational business (7) has eroded during the last two decades and is now being openly challenged by the Japanese and several European countries. The underlying reasons are subject to intensive international study, theorizing, and debate involving the most complex causal interrelationships of political, social, and economic factors. One of the most popularly debated factors concerns the comparative strengths of the American and Japanese management and organizational systems.

It is worthy of note that it is not the organizational structure or technology employed by Japanese managers (1, pp. 13-16) which holds the greatest promise for global managers; rather, it is the philosophy and value systems of their culture that allow their organizations to function so well. Although the challenge is clear, and the race for world industrial supremacy is well under way, the Japanese would be the first to say that both the United States and Japan can be winners if they learn from each other. According to Kohno, a senior economist at Diva Securities Company of Japan, "Japan must become multinational, otherwise it cannot survive. With increasing trade

barriers, it has to enter the market to produce. It is another type of trade" (2, p. 92).

Recommendations for Future Research

As a result of the empirical investigation conducted to analyze the effects and implications of participatory programs affecting organizational productivity in selected multinational firms in Saudi Arabia, the following recommendations are made for future study.

First, the great attraction of participatory programs similar to the quality control circle technique of today, as has been the case with earlier managerial programs (6), is that they provide management with a model program for introducing improvement. Further research and evaluation are needed on the theoretical basis of why and where QCCs work and why and where QCCs may fail.

Second, the quality control circle concept should not be copied blindly from the Japanese model but rather tailored to the needs of every special situation to be found in organizations operating outside the Japanese environment. The point of this discussion is to urge American as well as global managers to conduct further research on all aspects of QCCs before deciding whether or not to adapt a QCC program.

Third, due to financial and temporal restraints, this research study was limited to respondent participation by

only 10 per cent of the middle managers who work for ten randomly selected firms operating in Saudi Arabia. A comparable study which might be undertaken could study all levels of management to see whether or not similar relationships are achieved.

Fourth, the corporate population surveyed in this study consists of only ten of the multinational organizations that are presently based and engaged in petrochemical operations in Saudi Arabia. Additional research is needed to study and investigate a wide variety of industries and business activities in several countries, and to determine whether similar relationships are obtained.

Finally, this study focuses attention on a relatively new phenomenon that is on the rise--the multinational organization (2) in which people from different cultural backgrounds work together to produce a product or to render a service. Further study of this type of organization would undoubtedly enhance the understanding of such diverse working relationships and strengthen the prospect for advancing general principles in management and organizational effectiveness.

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APPENDIX A

MANAGEMENT SYSTEMS & PRODUCTIVITY

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RESEARCH INSTRUMENT

QUALITY CIRCLES AS PARTICIPATORY PROGRAMS AND ORGANIZATIONAL PRODUCTIVITY

THIS SURVEY INSTRUMENT IS DESIGNED TO LEARN ABOUT HOW PEOPLE WORK TOGETHER. THE AIM IS TO USE THE INFORMATION TO STUDY MANAGEMENT SYSTEMS IN MULTINATIONAL ORGANIZATIONS OPERATING IN SAUDI ARABIA AND HOW THESE SYSTEMS OR PROGRAMS RELATED TO ORGANIZATION PRODUCTIVITY.

IF THIS STUDY IS TO BE HELPFUL, IT IS IMPORTANT THAT YOU ANSWER EACH QUESTION AS THOUGHTFULLY AND FRANKLY AS POSSIBLE. THIS IS NOT A TEST AND THERE ARE NO RIGHT OR WRONG ANSWERS.

THE COMPLETED QUESTIONNAIRES ARE PROCESSED BY AUTOMATED EQUIPMENT WHICH SUMMARIZES THE ANSWERS IN STATISTICAL FORM SO THAT INDIVIDUALS CANNOT BE IDENTIFIED. TO ENSURE COMPLETED CONFIDENTIALITY PLEASE DO NOT WRITE YOUR NAME ANYWHERE ON THE QUESTIONNAIRE.

INSTRUCTIONS

1. Most questions can be answered by filling in one of the answer spaces. If you do not find the exact answer that fits your case, use the one that is closest to it.

2. Please answer all questions in order.

3. Remember, the value of the study depends upon your being straightforward in answering this questionnaire. You will not be identified with your answers.

4. Please use a soft pencil (No. 2 is ideal).

5. Definitions: This questionnaire asks about a lot of different aspects of your work. Among these are questions about your supervisor and your work group. The questions about your supervisor refer to the person to whom you report directly and the questions about your work group refer to all those persons who report to the same supervisor.

NOTE: Read these answer categories over carefully. Then answer each of the following questions by blackening in the numbered circle under the answer you want to give.

	1	2	3	4	5
	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
1. To what extent is this organizational generally quick to use improved work methods?	①	②	③	④	⑤
2. To what extent does this organization have a real interest in the welfare and happiness of those who work here?	①	②	③	④	⑤
3. How much does this organization try to improve working conditions?	①	②	③	④	⑤
4. To what extent are work activities sensibly organized in this organization?	①	②	③	④	⑤
5. How adequate for your work group is the information it gets about what is going on in other departments or shifts?	①	②	③	④	⑤
6. How receptive are people above your supervisor to ideas and suggestions from your work group?	①	②	③	④	⑤
7. To what extent does this organization tell your work group what it needs to know to do its job in the best possible way?	①	②	③	④	⑤
8. All in all, how satisfied are you with the persons in your work group?	①	②	③	④	⑤

9. All in all, how satisfied are you with your supervisor?

① ② ③ ④ ⑤

10. All in all, how satisfied are you with your job?

① ② ③ ④ ⑤

11. All in all, how satisfied are you with this organization?

① ② ③ ④ ⑤

NOTE: Read this answer categories over carefully. Then answer each of the following questions by blackening in the numbered circle under the answer you want to give.

① Very dissatisfied
② Somewhat dissatisfied
③ Neither satisfied nor dissatisfied
④ Fairly satisfied
⑤ Very satisfied

12. Considering your skills and the effort you put into the work, how satisfied are you with your pay?

① ② ③ ④ ⑤

13. How satisfied do you feel with the progress you have made in this organization up to now?

① ② ③ ④ ⑤

14. How satisfied do you feel with your changes for getting ahead in this organization in the future?

① ② ③ ④ ⑤

15. How are differences and disagreements between units or departments handled in this organization?

① Disagreements are almost always avoided, denied, or suppressed.

② Disagreements are often avoided, denied, or suppressed.

③ Sometimes disagreements are accepted or worked through; sometimes they are avoided or suppressed.

④ Disagreements are usually accepted as necessary and desirable and are worked through.

(5) Disagreements are almost always accepted as necessary and desirable and are worked through.

16. Why do people work hard in this organization?

(1) Just to keep their jobs and avoid being chewed out

(2) To keep their jobs and to make money

(3) To keep their jobs, make money, and to seek promotions

(4) To keep their jobs, make money, seek promotions, and for the satisfaction of a job well done

(5) To keep their jobs, make money, seek promotions, do a satisfying job, and because other people in their work group expect it.

17. To what extent do you enjoy performing the actual day-to-day activities that make up your job?

(1) (2) (3) (4) (5)

18. To what extent are there things about working here (people, policies, or conditions) that encourage you to work hard?

(1) (2) (3) (4) (5)

	Little or no influence	Some	Quite a bit	A great deal	A very great deal of influence

IN GENERAL, HOW MUCH SAY OR INFLUENCE DOES EACH OF THE FOLLOWING GROUPS OR PEOPLE HAVE ON WHAT GOES ON IN YOUR DEPARTMENT?

19. Lowest level supervisors (foremen, office supervisors, etc.)

(1) (2) (3) (4) (5)

20. Top managers (president, vice presidents, heads of large divisions, etc.)

(1) (2) (3) (4) (5)

21. Employees (people who have no subordinates)

(1) (2) (3) (4) (5)

22. Middle managers (department heads, area managers, etc.)

(1) (2) (3) (4) (5)

23. How are objectives set in this organization?

(1) Objectives are announced with no opportunity to raise questions or give comments

(2) Objectives are announced and explained, and an opportunity is then given to ask questions

(3) Objectives are drawn up, but are discussed with subordinates and sometimes modified before being issued

(4) Specific alternative objectives are drawn up by supervisors, and subordinates are asked to discuss them and indicate the one they think is best

(5) Problems are presented to those persons who are involved, and the objectives felt to be best are then set by the subordinates and the supervisor jointly, by group participation and disucssion

24. In this organization to what extent are decisions made at those levels where the most adequate and accurate information is available?

(1) (2) (3) (4) (5)

25. When decisions are being made, to what extent are the persons affected asked for their ideas?

(1) (2) (3) (4) (5)

26. People at all levels of an organization usually have know-how that could be of use to decision-makers. To what extent is information widely shared in this organization so that those who make decisions have access to all available knowledge?

(1) (2) (3) (4) (5)

PLEASE ANSWER QUESTIONS 27 THROUGH 53 ABOUT THE PERSON YOU IDENTIFIED. SUPERVISOR MEANS THE PERSON TO WHOM YOU REPORT DIRECTLY. FOR THE FOLLOWING SET OF ITEMS: PLEASE READ EACH QUESTIONS AND THEN ANSWER HOW IS IS NOW, AND HOW YOU'D LIKE IT TO BE.

How friendly and easy to approach is your supervisor?

27. This is how it is now: (1) (2) (3) (4) (5)

28. This is how I'd like it to be: (1) (2) (3) (4) (5)

When you talk with your supervisor, to what extent does he pay attention to what you're saying?

29. This is how it is now: (1) (2) (3) (4) (5)

30. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent is your supervisor willing to listen to your problems?

31. This is how it is now: (1) (2) (3) (4) (5)

32. This is how I'd like it to be: (1) (2) (3) (4) (5)

How much does your supervisor encourage people to give their best effort?

33. This is how it is now: (1) (2) (3) (4) (5)

34. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent does your supervisor maintain high standards of performance?

35. This is how it is now: (1) (2) (3) (4) (5)

36. This is how I'd like it to be: (1) (2) (3) (4) (5)

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
To what extent does your supervisor show you how to improve your performance?					
37. This is how it is now:	(1)	(2)	(3)	(4)	(5)
38. This is how I'd like it to be:	(1)	(2)	(3)	(4)	(5)
To what extent does your supervisor provide the help you need so that you can schedule work ahead of time?					
39. This is how it is now:	(1)	(2)	(3)	(4)	(5)
40. This is how I'd like it to be:	(1)	(2)	(3)	(4)	(5)
To what extent does your supervisor offer new ideas for solving job-related problems:					
41. This is how it is now:	(1)	(2)	(3)	(4)	(5)
42. This is how I'd like it to be:	(1)	(2)	(3)	(4)	(5)
To what extent does your supervisor encourage the persons who work for him to work as a team?					
43. This is how it is now:	(1)	(2)	(3)	(4)	(5)
44. This is how I'd like it to be:	(1)	(2)	(3)	(4)	(5)

NOTE: Read these answer categories over carefully. Then answer each of the following questions by blackening in the numbered circle under the answer you want to give.

To what extent does your supervisor encourage people who work for him to exchange opinions and ideas?

45. This is how it is now: (1) (2) (3) (4) (5)

46. This is how I'd like it to be: (1) (2) (3) (4) (5)

47. To what extent do you feel your supervisor has confidence and trust in you?

(1) (2) (3) (4) (5)

48. To what extent do you have confidence and trust in your supervisor?

(1) (2) (3) (4) (5)

49. To what extent does your supervisor handle well the technical side of his job--for example, general expertness, knowledge of job, technical skills needed in his profession or trade?

(1) (2) (3) (4) (5)

50. To what extent does your supervisor do a good job of representing your work group to other units? ("Represent" means telling others about what your group has done and can do, as well as explaining the problems facing it and its readiness to do things.)

(1) (2) (3) (4) (5)

WHEN IT IS NECESSARY FOR DECISIONS TO BE MADE THAT AFFECT YOUR WORK GROUP, TO WHAT EXTENT DOES YOUR SUPERVISOR DO EACH OF THE FOLLOWING BEFORE FINAL DECISIONS ARE MADE?

51. Provide the members of your work group with information about the decisions.

(1) (2) (3) (4) (5)

52. Ask for opinions and ideas from members of your work group.

(1) (2) (3) (4) (5)

53. Meet with his subordinates as a group, present problems that must be solved and work with the group to find solutions.

(1) (2) (3) (4) (5)

IN THE QUESTIONS BELOW, WORK GROUP MEANS ALL THOSE PERSONS WHO REPORT TO THE SAME SUPERVISOR.

How friendly and easy to approach are the persons in your work group?

54. This is how it is now: (1) (2) (3) (4) (5)

55. This is how I'd like it to be: (1) (2) (3) (4) (5)

When you talk with persons in your work group, to what extent do they pay attention to what you're saying?

56. This is how it is now: (1) (2) (3) (4) (5)

57. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent are persons in your work group willing to listen to your problems?

58. This is how it is now: (1) (2) (3) (4) (5)

59. This is how I'd like it to be: (1) (2) (3) (4) (5)

How much do persons in your work group encourage each other to give their best effort?

60. This is how it is now: (1) (2) (3) (4) (5)

61. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent do persons in your work group maintain high standards of performance?

62. This is how it is now: (1) (2) (3) (4) (5)

63. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent do persons in your work group help you find ways to do a better job?

64. This is how it is now: (1) (2) (3) (4) (5)

65. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent do persons in your work group provide the help you need so that you can plan, organize and schedule work ahead of time?

66. This is how it is now: (1) (2) (3) (4) (5)

67. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent do persons in your work group offer each other new ideas for solving job-related problems?

68. This is how it is now: (1) (2) (3) (4) (5)

69. This is how I'd like it to be: (1) (2) (3) (4) (5)

How much do persons in your work group encourage each other to work as a team?

70. This is how it is now: (1) (2) (3) (4) (5)

71. This is how I'd like it to be: (1) (2) (3) (4) (5)

How much do persons in your work group emphasize a team goal?

72. This is how it is now: (1) (2) (3) (4) (5)

73. This is how I'd like it to be: (1) (2) (3) (4) (5)

To what extent do persons in your work group exchange opinions and ideas?

74. This is how it is now: (1) (2) (3) (4) (5)

75. This is how I'd like it to be: (1) (2) (3) (4) (5)

76. To what edtent does your work group plan together and coordinate its efforts?

(1) (2) (3) (4) (5)

77. To what extent does your work group make good decisions and solve problems well?

(1) (2) (3) (4) (5)

78. To what extent do persons in your work group know what their jobs are and know how to do them well?

(1) (2) (3) (4) (5)

79. To what extent is information about important events and situati shared within your work group?

(1) (2) (3) (4) (5)

80. To what extent does your work group really want to meet its objectives successfully?

(1) (2) (3) (4) (5)

81. To what extent is your work group able to respond to unusual work demands placed upon it?

(1) (2) (3) (4) (5)

82. To what extent do you have confidence and trust in the persons in your work group?

(1) (2) (3) (4) (5)

83. To what extent are the equipment and resources you have to do yo work with adequate, efficient, and well-maintained?

(1) (2) (3) (4) (5)

84. Into what age bracket do you fall?

(1) 25 years or under
(2) 26 years to 30 years
(3) 31 years to 35 years
(4) 36 years to 40 years
(5) 41 years to 45 years
(6) 46 years to 55 years
(7) 56 years or over

85. How much schooling have you had?

(1) Some grade school
(2) Completed grade school
(3) Some high school
(4) Completed high school
(5) Some college
(6) Completed college
(7) Some graduate school
(8) Completed graduate school

86 While you were growing up--say until you were twenty-five--what part of the world did you live in for the most part?

(1) Middle East
(2) Far East
(3) Europe
(4) North America
(5) South America
(6) Other

87. How good a job is done by the people in your division in anticipating problems that may come up in the future and preventing them from occurring or minimizing their effects?

(1) They do a poor job in anticipating problems

(2) Not too good a job

(3) A fair job

(4) They do a very good job

(5) They do an excellent job in anticipating problems

88. From time to time newer ways are discovered to organize work, and newer equipment and techniques are found with which to do the work. How good a job do the people in your division do at keeping up with these changes that could affect the way they do their work?

(1) They do a poor job of keeping up-to-date

(2) Not too good a job

(3) A fair job

(4) They do a good job

(5) They do an excellent job of keeping up-to-date

89. When changes are made inthe routines or equipment, how quickly do the people in your division accept and adjust to these changes?

(1) Most people accept and adjust to them very slowly

(2) Rather slowly

(3) Fairly rapidly

(4) They adjust very rapidly, but not immediately

(5) Most people accept and adjust to them immediately

90. What proportion of the people in your division readily accept and adjust to these changes? - - — — - - - — — - - - - - - - - →

90. What proportion of the people in your division readily accept and adjust to these changes?

(1) Considerably less than half of the people accept and adjust to these changes readily

(2) Slightly less than half do

(3) The majority do

(4) Considerably more than half do

(5) Practically everyone accepts and adjusts to these changes readily

91. Think carefully of the things that you produce in your work and of the things produced by those people who work around you in your division. Thinking now of various things produced by the people you know <u>in your division</u>, how much are they producing

(1) Their production is very low

(2) It is farily low

(3) It is neither high or low

(4) It is farily high

(5) It is very high

92. How good would you say is the <u>quality</u> of the products or services produced by the people you know in your division?

(1) Their products or services are of poor quality

(2) Their quality is not too good

(3) Fair quality

(4) Good quality

(5) Excellent quality

93. Do the people in your division seem to get maximum output from the resources (money, people, equipment, etc.) they have available? That is, how efficiently do they do their work?

(1) They do not work efficiently at all
(2) Not too efficient
(3) Fairly efficient
(4) They are very efficient
(5) They are extremely efficient

94. Rate each of the following factors as a major cause of increasing productivity in your division.

(1) Higher wages than other similar companies
(2) Recognition of good quality products by management
(3) Quality Control Circles activities in your division
(4) Efficient equipments and efficient work place
(5) Responsibility and highly motivated employees

95. Overall, how relevant and how important are the Quality Control Circles concept to you and to your fellow workers

(1) Highly important
(2) Important
(3) Undecided
(4) Not important
(5) Has no value or advantages to anybody

96. There are several names for participatory programs similar to Quality Control Circles. They are called different names in order to fit their environments and needs. If you do not find the exact answer that fits your case, use the one that is closest to it.

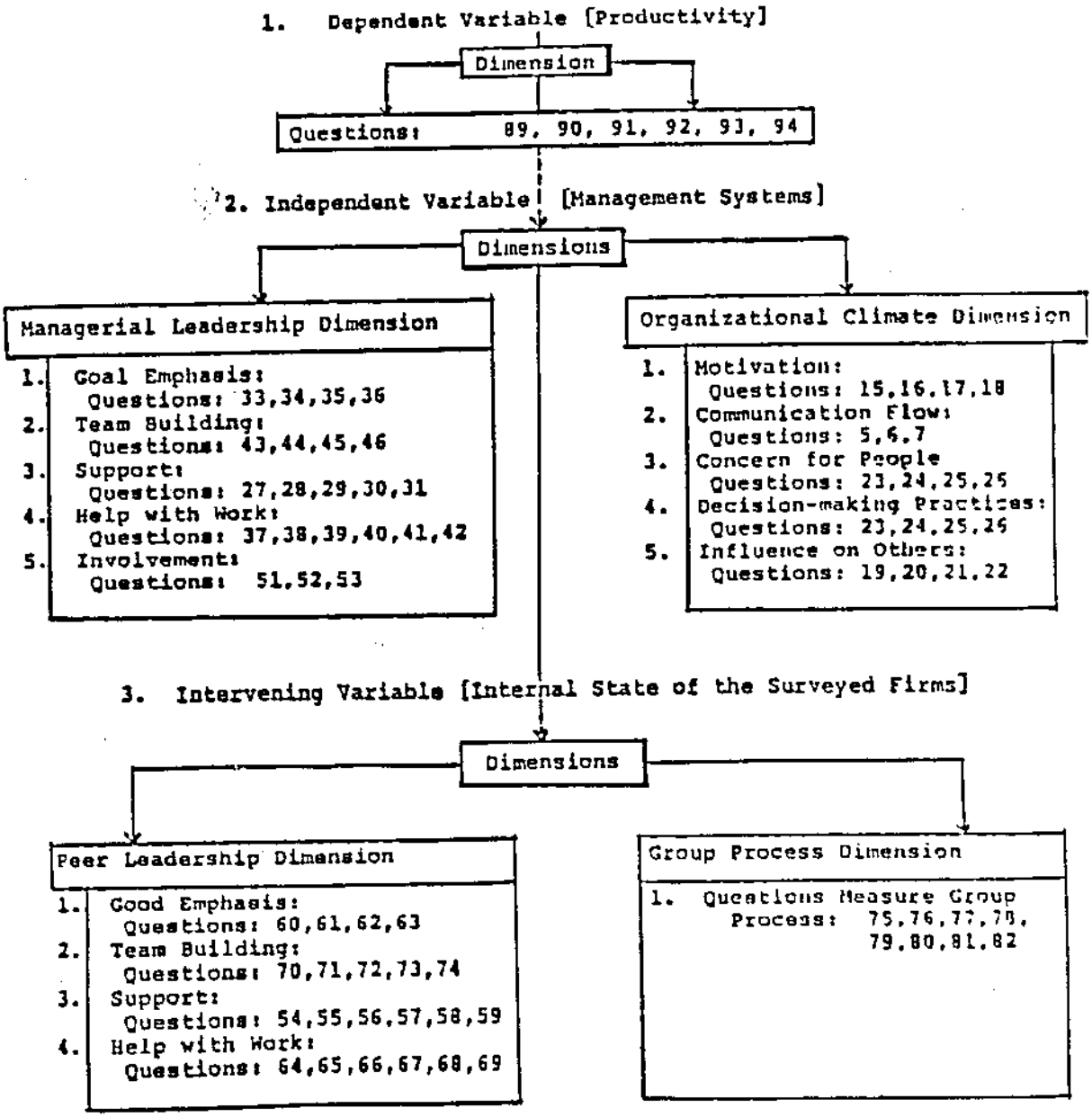
(1) Participative Management Systems-Techniques
(2) Self-Management Teams
(3) Team Management Groups
(4) Quality Control Circles Activities
(5) Problems-Solving Circles
(6) Others _____

APPENDIX B

VARIABLES-CORRESPONDING QUESTIONS-INDICES IN THE RESEARCH MODEL

APPENDIX B

VARIABLES-CORRESPONDING QUESTIONS-INDICES IN THE RESEARCH MODEL



APPENDIX C

DATA TABULATION FOR THE SURVEYED FIRMS

TABLE XIX

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

FIRM A

Code	Ref.*	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
1	A	AM	A-1	3.20		A-1	3.35		A-1	3.10	
1	A	AM	A-1	3.10		A-1	3.15		A-1	3.20	
1	A	AM	A-1	3.25	3.20	A-1	3.36	3.32	A-1	3.40	3.48
1	A	AM	A-1	3.15		A-1	3.10		A-1	3.50	
1	A	AM	A-1	3.05		A-1	3.20		A-1	3.70	
1	A	AM	A-2	3.70		A-2	3.70		A-2	3.56	
1	A	AM	A-2	3.80		A-2	3.80		A-2	3.40	
1	A	AM	A-2	3.95	3.91	A-2	3.70	3.78	A-2	3.70	3.60
1	A	AM	A-2	3.90		A-2	3.85		A-2	3.80	
1	A	AM	A-2	3.85		A-2	3.80		A-2	3.20	
1	A	AM	A-3	3.00		A-3	3.80		A-3	3.40	
1	A	AM	A-3	3.05		A-3	3.80		A-3	3.60	
1	A	AM	A-3	3.10	3.05	A-3	3.85	3.76	A-3	3.40	3.15
1	A	AM	A-3	3.00		A-3	3.65		A-3	3.20	
1	A	AM	A-3	3.00		A-3	3.70		A-3	3.10	
1	A	AM	A-3	3.10		A-3	3.55		A-3	3.00	
1	A	Grand Mean: 3.40				3.62			3.41		

*Ref = Reference, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XX

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

Firm B

Code	Ref.*	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
2	B	AM	B-1	3.35		B-1	3.40		B-1	3.20	
2	B	AM	B-1	3.45	3.35	B-1	3.60	3.43	B-1	3.18	3.31
2	B	AM	B-1	3.35		B-1	3.50		B-1	3.45	
2	B	AM	B-1	3.45		B-1	5.35		B-1	3.40	
2	B	AM	B-2	3.60		B-2	3.95		B-2	3.10	
2	B	AM	B-2	3.20	3.35	B-2	3.99	3.97	B-2	3.25	3.20
2	B	AM	B-2	3.40		B-2	3.95		B-2	3.25	
2	B	AM	B-2	3.20		B-2	3.99		B-2	3.20	
2	B	AM	B-3	3.40		B-3	3.60		B-3	3.75	
2	B	AM	B-3	3.60	3.44	B-3	3.40	3.43	B-3	3.50	3.60
2	B	AM	B-3	3.35		B-3	3.20		B-3	3.50	
2	B	AM	B-3	3.20		B-3	3.10		B-3	3.70	
2	B	AM	B-4	3.70		B-4	3.70		B-4	3.60	
2	B	AM	B-4	3.80	3.70	B-4	3.40	3.80	B-4	3.80	3.68
2	B	AM	B-4	3.75		B-4	3.80		B-4	3.70	
2	B	AM	B-4	3.60		B-4	3.90		B-4	3.60	
2	B	Grand Mean: 3.47					3.66			3.49	

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXI

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

FIRM C

Code	Ref.*	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Mean Internal State of Firms		
3	C	AM	C-1	3.80		C-1	3.60		C-1	3.80	
3	C	AM	C-1	3.90	3.85	C-1	3.70	3.70	C-1	3.90	3.85
3	C	AM	C-1	3.80		C-1	3.55		C-1	3.45	
3	C	AM	C-2	3.70		C-2	3.60		C-2	3.40	
3	C	AM	C-2	3.30	3.60	C-2	3.50	3.63	C-2	3.20	3.45
3	C	AM	C-2	3.80		C-2	3.80		C-2	3.50	
3	C	AM	C-3	3.80		C-3	3.70		C-3	3.60	
3	C	AM	C-3	3.82	3.83	C-3	3.50	3.60	C-3	3.50	3.63
3	C	AM	C-3	3.87		C-3	3.60		C-3	3.80	
3	C	AM	C-4	3.70		C-4	3.30		C-4	3.80	
3	C	AM	C-4	3.80	3.80	C-4	3.20	3.30	C-4	3.90	3.86
3	C	AM	C-4	3.90		C-4	3.40		C-4	3.90	
3	C	AM	C-5	3.90		C-5	3.40		C-5	3.70	
3	C	AM	C-5	3.85	3.86	C-5	3.40	3.50	C-5	3.40	3.56
3	C	AM	C-5	3.85		C-5	3.70		C-5	3.60	
3	C	AM	C-6	3.80	3.85	C-6	3.80	3.80	C-6	3.80	3.75
3	C	AM	C-6	3.90		C-6	3.80		C-6	3.70	
3	C	Grand Mean:		3.79			3.58			3.69	

*Ref. = Reference, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German

TABLE XXII

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

Firm G

Code	Ref.*	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
4	G	GR	G-1	3.40		G-1	3.70		G-1	3.66	
4	G	GR	G-1	3.60	3.53	G-1	3.75	3.68	G-1	3.50	3.40
4	G	GR	G-1	3.60		G-1	3.60		G-1	3.20	
4	G	GR	G-2	3.20		G-2	3.75		G-2	3.40	
4	G	GR	G-2	3.40	3.21	G-2	3.40	3.55	G-2	3.60	3.45
4	G	GR	G-2	3:10		G-2	3.20		G-2	3.50	
4	G	GR	G-3	3.40		G-3	3.20		G-3	3.20	
4	G	GR	G-3	3.50	3.53	G-3	3.30	3.68	G-3	3.25	3.26
4	G	GR	G-3	3.70		G-3	3.40		G-3	3.25	
4	G	GR	G-4	3.40		G-4	3.90		G-4	3.25	
4	G	GR	G-4	3.40	3.45	G-4	3.95	3.92	G-4	3.20	3.25
4	G	GR	G-4	3.60		G-4	3.92		G-4	3.30	
4	G	GR	G-5	3.20		G-5	3.40		G-5	3.40	
4	G	GR	G-5	3.25	3.22	G-5	3.60	3.70	G-5	3.30	3.25
4	G	GR	G-5	3.20		G-5	3.70		G-5	3.05	
4	G	Grand Mean: ≈ 3.68				≈ 3.62			≈ 3.71		

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXIII

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

Firm N

Code	* Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
5	N	AM	N-1	3.10		N-1	3.80		N-1	3.40	
5	N	AM	N-1	3.15	3.25	N-1	3.85	3.70	N-1	3.20	3.30
5	N	AM	N-1	3.25		N-1	3.60		N-1	3.10	
5	N	AM	N-1	3.20		N-1	3.70		N-1	3.20	
5	N	AM	N-2	3.50		N-2	3.70		N-2	3.20	
5	N	AM	N-2	3.60	3.50	N-2	3.80	3.77	N-2	3.20	3.40
5	N	AM	N-2	3.40		N-2	3.80		N-2	3.60	
5	N	AM	N-2	3.50		N-2	3.80		N-2	3.70	
5	N	AM	N-3	3.50		N-3	3.60		N-3	3.10	
5	N	AM	N-3	3.40	3.17	N-3	3.80	3.70	N-3	3.05	3.20
5	N	AM	N-3	2.95		N-3	3.70		N-3	3.40	
5	N	AM	N-3	2.85		N-3	3.70		N-3	3.30	
5	N	AM	N-4	3.60		N-4	3.45		N-4	3.60	
5	N	AM	N-4	3.40	3.60	N-4	3.50	3.65	N-4	3.15	3.30
5	N	AM	N-4	3.20		N-4	3.80		N-4	3.15	
5	N	AM	N-4	3.60		N-4	3.90		N-4	3.30	
5	N	AM	GM:	3.38			3.70			3.31	

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXIV

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

Firm H

Code	Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
6	H	JP	M-1	4.10		M-1	4.20		M-1	4.20	
6	H	JP	M-1	4.60		M-1	4.25		M-1	4.20	
6	H	JP	M-1	4.70	4.44	M-1	5.20	4.18	M-1	4.00	4.12
6	H	JP	M-1	4.70		M-1	4.10		M-1	4.00	
6	H	JP	M-1	4.50		M-1	4.10		M-1	4.20	
6	H	JP	M-2	4.20		M-2	4.10		M-2	4.00	
6	H	JP	M-2	4.30		M-2	4.20		M-2	4.00	
6	H	JP	M-2	4.40	4.23	M-2	4.10	4.12	M-2	4.00	4.05
6	H	JP	M-2	4.30		M-2	4.10		M-2	4.05	
6	H	JP	M-2	4.10		M-2	4.10		M-2	4.20	
6	H	JP	M-3	4.50		M-3	4.10		M-3	4.20	
6	H	JP	M-3	4.40		M-3	4.10		M-3	4.25	
6	H	JP	M-3	4.45	4.53	M-3	4.25	4.17	M-3	4.10	4.15
6	H	JP	M-3	4.60		M-3	4.25		M-3	4.10	
6	H	JP	M-3	4.70		M-3	4.25		M-3	4.10	
6	H	JP	GM:	4.30			4.16			4.08	

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXV

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

FIRM O

Code	Ref.*	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Mean Internal State of Firms		
7	O	JP	O-1	4.70		O-1	4.40		O-1	4.00	
7	O	JP	O-1	4.90	4.82	O-1	4.70	4.67	O-1	4.10	4.07
7	O	JP	O-1	4.75		O-1	4.80		O-1	4.10	
7	O	JP	O-2	4.40		O-2	4.20		O-2	4.10	
7	O	JP	O-2	4.49	4.40	O-2	4.30	4.33	O-2	4.00	4.06
7	O	JP	O-2	4.45		O-2	4.50		O-2	4.10	
7	O	JP	O-3	4.30		O-3	4.20		O-3	4.00	
7	O	JP	O-3	4.40	4.30	O-3	4.40	4.31	O-3	4.00	4.00
7	O	JP	O-3	4.50		O-3	4.60		O-3	4.00	
7	O	JP	O-4	4.20		O-4	4.50		O-4	4.10	
7	O	JP	O-4	4.30	4.22	O-4	4.50	4.50	O-4	4.10	4.08
7	O	JP	O-4	4.20		O-4	4.50		O-4	4.10	
7	O	JP	O-4	4.20		O-4	4.50		O-4	4.10	
7	O	Grand Mean:		4.43			4.45			4.05	

*Ref. = Reference, Nat. = Nationality, Indiv. = Individual Mean Score.
AM = American, JP = Japanese, GR = German.

TABLE XXVI

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

FIRM X

Code	* Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Mean Internal State of Firms		
8	X	JP	X-1	4.40		X-1	4.60		X-1	4.20	
8	X	JP	X-1	4.35	4.45	X-1	4.70	4.40	X-1	4.20	4.22
8	X	JP	X-1	4.55		X-1	4.20		X-1	4.25	
8	X	JP	X-2	4.10		X-2	4.10		X-2	4.35	
8	X	JP	X-2	4.05	3.95	X-2	4.20	4.15	X-2	4.30	4.28
8	X	JP	X-2	3.85		X-2	4.15		X-2	4.20	
8	X	JP	X-3	4.40		X-3	4.30		X-3	4.10	
8	X	JP	X-3	4.45	4.43	X-3	4.26	4.20	X-3	4.15	4.13
8	X	JP	X-3	4.45		X-3	4.10		X-3	4.15	
8	X	JP	X-4	4.10		X-4	4.50		X-4	4.30	
8	X	JP	X-4	4.10	4.10	X-4	4.55	4.50	X-4	4.50	4.30
8	X	JP	X-4	4.10		X-4	4.45		X-4	4.10	
8	X	JP	X-5	4.30		X-5	4.40		X-5	4.50	
8	X	JP	X-5	4.35	4.30	X-5	4.30	4.30	X-5	4.60	4.30
8	X	JP	X-5	4.25		X-5	4.20		X-5	3.80	
8	X	JP	X-6	4.10		X-6	4.10		X-6	4.10	
8	X	JP	X-6	4.10	4.10	X-6	4.10	4.10	X-6	4.20	4.10
8	X	Grand Mean:		4.23			4.26			4.22	

*Ref. = Reference, Nat. = Nationality, Indiv. = Individual Mean Scores.
Am = American, JP = Japanese, GR = German.

TABLE XXVII

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

Firm Y

Code	* Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System	Dependent Variable Grand Means Productivity		Intervening Variable Grand Means Internal State of Firms	
9	Y	GR	Y-1	3.95	Y-1	3.40	Y-1	3.80
9	Y	GR	Y-1	3.97	Y-1	3.60	Y-1	3.70
9	Y	GR	Y-1	3.95	Y-1	3.30	Y-1	3.60
9	Y	GR	Y-1	3.80	Y-1	3.40	Y-1	3.40
9	Y	GR	Y-2	3.95	Y-2	3.50	Y-2	3.50
9	Y	GR	Y-2	3.90	Y-2	5.70	Y-2	3.60
9	Y	GR	Y-2	3.90	Y-2	5.60	Y-2	3.70
9	Y	GR	Y-2	3.85	Y-2	5.40	Y-2	3.50
9	Y	GR	Y-3	4.10	Y-3	4.50	Y-3	4.26
9	Y	GR	Y-3	4.20	Y-3	4.20	Y-3	4.70
9	Y	GR	Y-3	4.10	Y-3	4.20	Y-3	4.80
9	Y	GR	Y-3	4.40	Y-3	4.00	Y-3	4.80
9	Y	GR	Y-4	4.20	Y-4	4.20	Y-4	3.95
9	Y	GR	Y-4	4.30	Y-4	4.30	Y-4	4.20
9	Y	GR	Y-4	4.40	Y-4	4.10	Y-4	4.30
9	Y	GR	Y-4	4.30	Y-4	4.20	Y-4	4.55
9	Y	GR	Y-5	3.90	Y-5	4.75	Y-5	4.20
9	Y	GR	Y-5	3.92	Y-5	4.80	Y-5	4.30
9	Y	GR	Y-5	3.92	Y-5	4.60	Y-5	4.50
9	Y	GR	Y-5	3.90	Y-5	4.40	Y-5	4.60
9	Y		GM:	3 .97		4.20		4.12

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores
AM = American, JP = Japanese, GR = German.

TABLE XXVIII

SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS

FIRM Z

Code	*Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Mean Internal State of Firms		
10	Z	JP	Z-1	4.10		Z-1	4.20		Z-1	4.10	
10	Z	JP	Z-1	4.15	4.25	Z-1	4.30	4.20	Z-1	4.20	4.20
10	Z	JP	Z-1	4.50		Z-1	4.10		Z-1	4.30	
10	Z	JP	Z-2	4.50		Z-2	4.30		Z-2	4.00	
10	Z	JP	Z-2	4.50	4.56	Z-2	4.30	4.30	Z-2	4.10	4.10
10	Z	JP	Z-2	4.60		Z-2	4.30		Z-2	4.20	
10	Z	JP	Z-3	3.95		Z-3	3.95		Z-3	4.10	
10	Z	JP	Z-3	4.20	3.92	Z-3	3.90	3.88	Z-3	4.15	4.11
10	Z	JP	Z-3	3.80		Z-3	3.80		Z-3	4.20	
10	Z	JP	Z-4	4.50		Z-4	3.95		Z-4	4.10	
10	Z	JP	Z-4	4.35	4.45	Z-4	3.85	3.95	Z-4	4.15	4.13
10	Z	JP	Z-4	4.50		Z-4	3.95		Z-4	4.15	
10	Z	JP	Z-5	4.20		Z-5	4.30		Z-5	4.00	
10	Z	JP	Z-5	4.40	4.30	Z-5	4.20	4.25	Z-5	4.00	4.00
10	Z	JP	Z-5	4.30		Z-5	4.15		Z-5	4.00	
10	Z	Grand Mean:		4.29			4.12			4.10	

*Ref. = Reference, Nat. = Nationality, Indiv. = Individual Mean Score.
AM = American, JP = Japanese, GR = German.

TABLE XXIX

SECOND SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS
(Purpose :Test-Retest done two months of the first survey)
Firm M

Code	* Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity			Intervening Variable Grand Means Internal State of Firms		
2	M	JP	M-1	4.20		M-1	4.30		M-1	4.10	
2	M	JP	M-1	4.30	4.20	M-1	4.10	4.20	M-1	4.15	4.10
2	M	JP	M-1	4.20		M-1	4.30		M-1	4.10	
2	M	JP	M-1	4.10		M-1	4.30		M-1	4.05	
2	M	JP	M-2	4.10		M-2	4.40		M-2	4.20	
2	M	JP	M-2	4.15		M-2	4.10	4.19	M-2	4.10	
2	M	JP	M-2	4.10		M-2	4.15		M-2	4.10	
2	M	JP	M-2	4.20	4.14	M-2	4.10		M-2	4.15	4.12
2	M	JP	M-3	4.15		M-3	4.10		M-3	4.40	
2	M	JP	M-3	4.20		M-3	4.20		M-3	4.30	
2	M	JP	M-3	4.10		M-3	4.25	4.21	M-3	4.20	
2	M	JP	M-3	4.20	4.16	M-3	4.30		M-3	4.40	4.38
2	M	JP	GH:	4.17			4.20			4.20	

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXX

SECOND SAMPLE DATA TABULATION FOR THE SURVEYED FIRMS
(purpose: Test-Retest, done after two months of the first survey)

Firm B

Code	Ref.	Nat.	Indiv.	Independent Variable Grand Means Management System		Dependent Variable Grand Means Productivity		Intervening Variable Grand Means Internal State of Firms	
2	B	AM	B-1	3.30		B-1	3.90	B-1	3.35
2	B	AM	B-1	3.20		B-1	3.85	B-1	3.20 3.31
2	B	AM	B-1	3.60	3.36	B-1	3.80 3.85	B-1	3.40
2	B	AM	B-2	3.45		B-2	3.60	B-2	3.20
2	B	AM	B-2	3.35	3.28	B-2	3.55 3.55	B-2	3.15 3.15
2	B	AM	B-2	3.05		B-2	3.50	B-2	3.10
2	B	AM	B-3	3.40		B-3	3.65	B-3	3.10
2	B	AM	B-3	3.35	3.30	B-3	3.85	B-3	3.20
2	B	AM	B-3	3.15		B-3	3.90 3.80	B-3	3.10 3.12
2	B	AM	B-4	3.20		B-4	3.85	B-4	3.15
2	B	AM	B-4	3.40	3.25	B-4	3.85	B-4	3.35
2	B	AM	B-4	3.25		B-4	3.75 3.81	B-4	3.10 3.20
2	B	Grand Mean:		3.31		3.75		3.20	

*Ref. = References, Nat. = Nationality, Indiv. = Individual Mean Scores.
AM = American, JP = Japanese, GR = German.

TABLE XXXI

SUMMARY OF GRAND MEAN SCORES FOR VARIABLES IN THE STUDY-BY GROUPS IN THE TOTAL SAMPLE*

Groups in Firms (represent tne company and tne division units)	Management System Independent Variables	Internal State Intervening Variables		Productivity Dependent Variable	
A-1 Red = 3.40		3.15		3.45	
A-2 Blue = 3.50	3.40	3.60	3.41	3.80	3.62
A-3 Yellow = 3.29		3.50		3.60	
B-1 Blue = 3.52		3.60		3.70	
B-2 Blue = 3.49	3.47	3.70	3.49	3.80	3.66
B-3 Red = 3.48		3.20		3.50	
C-1 Red = 3.76		3.90		3.80	
C-2 Red = 4.07		3.45		3.75	
C-3 Yellow = 3.92	3.79	3.75	3.69	3.70	3.58
C-4 Blue = 3.87		3.80		3.25	
C-5 Red = 3.37		3.55		3.40	
G-1 Red = 3.82		3.70		3.85	
G-2 Yellow = 3.55		3.90		3.70	
G-3 Blue = 3.30	3.71	3.40	3.62	3.85	3.68
G-4 Red = 4.22		3.60		3.40	
G-5 Blue = 3.66		3.50		3.60	
N-1 Red = 3.20		3.25		3.15	
N-2 Blue = 3.91	3.38	3.60	3.31	3.10	3.70
N-3 Yellow = 3.05		3.10		4.85	
M-1 Red = 4.40		3.90		3.90	
M-2 Blue = 3.90	4.30	4.20	4.08	4.40	4.16
M-3 Yellow = 4.50		4.15		4.20	

TABLE XXXI--continued

Groups in Firms (Represent the company and the division units)	Management System Independent Variables	Internal State Intervening Variables		Productivity Dependent Variables	
O-1 Blue = 3.90		4.10		4.25	
O-2 Blue = 4.70	4.43	3.80	4.05	4.70	4.45
O-3 Yellow = 4.40		4.40		4.80	
O-4 Red = 4.75		3.90		3.95	
X-1 Red = 3.80		3.90		4.10	
X-2 Red = 3.90		4.50		4.60	
X-3 Blue = 3.90	4.23	4.50	4.22	4.70	4.26
X-4 Blue = 4.65		4.30		4.05	
X-5 Blue = 4.75		4.25		3.95	
X-6 Yellow = 4.40		3.90		4.20	
Y-1 Red = 4.10		3.95		4.40	
Y-2 Blue = 4.00		4.60		4.60	
Y-3 Blue = 3.85	3.97	4.40	4.12	4.00	4.20
Y-4 Red = 3.75		3.90		3.90	
Y-5 Yellow = 4.15		3.75		4.10	
Z-1 Blue = 3.90		3.90		3.95	
Z-2 Red = 3.95		4.60		4.05	
Z-3 Yellow = 4.55	4.29	3.95	4.10	4.60	4.12
Z-4 Yellow = 4.75		3.70		3.30	
Z-5 Red = 4.30		4.40		4.70	

* Color refers to the following: Red = Management-Marketing groups; Blue = Production-operation groups; Yellow = Accounting-Finance groups in the selected firms. Only groups which have two or more subjects included in this table.

TABLE XXXII

STATISTICAL SUMMARY - MEAN SCORES AND MULTIPLE REGRESSION ANALYSIS
MEANS - R - R^2 - F - ratio
GRAND MEAN SCORES FOR MANAGEMENT SYSTEM, (IND. VARIABLES) INTERNAL STATE (INTERVENING VARIABLES) AND PRODUCTIVITY BY ORGANIZATION (DEP. VARIABLES)

Organization			Management System	Internal State	
Code	Reference	National	Leadership & Climate	Peer Leadership & Groups	Productivity
1	A	AM	3.40	3.41	3.62
2	B	AM	3.47	3.49	3.66
3	C	AM	3.79	3.69	3.58
4	G	GR	3.71	3.62	3.68
5	N	AM	3.38	3.31	3.70
Average			3.43	3.50	3.57
6	M	JP	4.30	4.08	4.16
7	O	JP	4.43	4.05	4.45
8	X	JP	4.23	4.22	4.26
9	Y	GR	3.97	4.12	4.20
10	Z	JP	4.29	4.10	4.12
Average		*	4.31	4.11	4.20
Grand Mean			3.93	3.80	3.88

Multiple Regression for Evaluating the Dependent Variable (Productivity) and Independent Variable (Management system)

Multiple Regression = R = 0.80

F. ratio = 14.65

Regression Square = R^2 = 0.65

Multiple Regression Analysis Between Management Systems and Internal State
R^2 = .56 at
F - 7.41

Multiple Regression Analysis For Evaluation Intervening Variables (Internal State) and Dependent Variable (Productivity)

Multiple Regression = R = 0.64

Regression Square = R^2 = 0.52

F - ratio = 8.25

* AM = American; GR = German; JP = Japanese
** All P<.05

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